

# The Mining Journal

## RAILWAY AND COMMERCIAL GAZETTE.

FORMING A COMPLETE RECORD OF THE PROCEEDINGS OF ALL PUBLIC COMPANIES.

No. 638.—Vol. XVII.

LONDON, SATURDAY, NOVEMBER 13, 1847.

[PRICE 6D.]

**HYDE AND HOUGHTON COLLIERIES.**  
**IMPORTANT SALE OF COLLIERY ENGINES AND UTENSILS.**  
**TO BE SOLD, BY AUCTION, BY MR. T. M. FISHER,** on Wednesday, Thursday, and Friday, the 24th, 25th, and 26th days of November, 1847, at the HYDE and HOUGHTON COLLIERIES, near MANCHESTER, in consequence of the expiration of the lease, and the owners declining the business. Sale to commence at Eleven o'clock each day. All the highly valuable PLANT and MACHINERY, which is in perfect condition, and the most effective in the trade, comprising hand-CONDENSING STEAM-ENGINE, cylinder 22 in. diameter, 4 ft. stroke; portable slide valve condensing ditto, cylinder 22 in. diameter, 3 ft. 6 in. stroke; hand-gear condensing ditto, cylinder 27 in. diameter, 5 ft. stroke; hand-gear condensing ditto, cylinder 34 in. diameter, 6 ft. stroke, with metallic piston; and single acting hand-gear lifting ditto, with double beam, cylinder 48 in. diameter, 7 ft. stroke, all in the best possible condition; wagon-shaped steam-boller, 14 ft. by 5 ft.; one ditto, 15 ft. by 5 ft.; one ditto, 20 ft. by 5 ft.; one ditto, 20 ft. by 6 ft.; one ditto, 17 ft. 9 in. by 9 ft.; cylindrical fired ditto, 20 ft. 9 in. by 5 ft. 9 in.; ditto, 20 ft. 9 in. by 6 ft. 5 in.; air-pump, 15 in. diameter, 6 ft. stroke, with epicycloidal driving gear; two ditto ditto, each 27 in. diameter, 4 ft. stroke; one ditto 27 in. diameter, 5 ft. stroke; one ditto, 27 in. diameter, 4 ft. 4 in. stroke; and one ditto, 30 in. diameter, 3 ft. stroke; all with metallic pistons, regulating valves and gauges, wrought-iron air vessels, 7 ft. diameter, 16 ft. deep; four pneumatic winding engines, each with two oscillating cylinders, 12 in. diameter, 2 ft. stroke, and winding gear; one slide valve ditto, cylinder 16 in. diameter, 3 ft. 6 in. stroke; cylindrical fired ditto, 20 ft. 9 in. by 5 ft. 9 in.; winding chain, made of 1 in. Low Moor iron, 220 ft. long; set of boring rods for 60 yards, with bite, shells, augur heads, and rymers; Davy's safety-lamps; several sets of blasting tools; cast-iron point-plates and landing tables; three large wrought-iron water buckets; about 160 1½ floor tins; powerful steel-yard; capital nearly new weighing machine, up to five tons, by Steel, of Burnley; 12½ ton coal waggon; 3 coal boats; capstan, ropes, chains, railway 800 yards long, with cast-iron rails and stone sleepers, smaller tools, wrought, cast, and steel; 6 in. benches and stools, cranes, saw, with bench and driving gear; counting-house fixtures, and other effects.  
May be viewed on Monday and Tuesday, the 23d and 24th of November, and catalogue had on the premises, or before, on application to the Auctioneer, 21, Princess-street, Manchester.

**FOR SALE, BY PRIVATE CONTRACT.—A single-acting PUMPING-ENGINE**—cylinder 30-inch diameter, 9-inch stroke, equal beam, with 7-ton boiler, cylinders, spring beam, and first set of rod-shafts attached, being the engine of Wheel St. Cleer. For particulars, apply to Capt. Osborne, Lieut. Col. West, near St. Blazey; or Mr. Rendle, the patron, 18, Octagon, Plymouth.

**FOR SALE, A 70-inch cylinder ENGINE, without boilers.**  
For price, and further particulars, please apply to Samuel Grose, Esq., engineer, Wall, Gwinear, Camborne.

**STEAM-ENGINES.**—From 8 to 20-horse power ENGINES ALWAYS IN STOCK.  
Apply to Mr. CAPPEL, Engine-Maker and Founder, BIRMINGHAM.  
Price—£15 to £16; with boiler, £23 per horse.

**STRONG MIXING PIG-IRON.**—The YSTALFYERA IRON COMPANY beg to solicit ORDERS for their ANTHRACITE PIG-IRON. This iron mixes well with Scotch pig—imparting to it strength and elasticity, and receiving from it a portion of the softness and fluidity. No. 3 pig is recommended for mixing with soft iron—Nos. 1 and 2, for machinery castings, requiring great soundness and strength. At this period, when cast-iron is so much employed in the construction of bridges and other buildings, requiring all the strength and elasticity which the best mixture of metal will afford, it may be well to call attention to the advantages of ANTHRACITE PIG-IRON, as ascertained by that great practical authority, the late DAVID MENZIES, Esq., M.C.E.:—  
"It greatly exceeds, in strength, in defective powers, and capacity to resist impact, any iron at this time manufactured in the United Kingdom."  
"It now only remains for me to mention a property peculiar to this iron, which was noticed at the time I made the trial experiments, four years ago, but which has been more fully developed in the more recent trials. The property is, that the iron, when cast in the form of a bar, or in the form of a plate, has a tendency to the bar, in deflecting and breaking, to resume its rectangular form. Bars that had obtained a permanent set of 2-10ths, when afterwards broken, presented but a slight deviation from a right line; and in no case, did the curvature exceed one-fourth of a tenth."  
"It was also remarked, that most of the fractures, in breaking, presented a regularity of grain throughout, resembling the structure of unhardened steel."

Address THE YSTALFYERA IRON COMPANY, Near NEATH, SOUTH WALES.  
Dated June 22, 1847.

**HOT-BLAST WITHOUT COAL, LABOUR, or REPAIRS.**  
DIXON and BUDD'S PATENTS.  
Apply for particulars, or to inspect the process in operation on six blast-furnaces, at J. Palmer Budd, Esq., Ystalfyera Iron-Works, near Neath.  
Dated June 22, 1847.

**PATENT GALVANISED IRON COMPANY.**  
INCORPORATION OF COMPANY WITH POWERS TO HOLD LANDS, TO RAISE MONEY BY LOAN, AND TO PURCHASE LETTERS PATENT.—Notice is hereby given, that APPLICATION is intended to be made to PARLIAMENT, in the ensuing session, for leave to bring in a bill to incorporate a company by the name of the Patent Galvanised Iron Company, for carrying into effect the purchase and taking of lease, and the working of opened and unopened mines, yielding iron, ironstone, or other metals; coal, culm, or other minerals or mineral produce, and the smelting manufacture, and sale thereof, and for coating, covering, or galvanising iron with zinc or other metals, and for the general purchase and sale of iron and coal, coke, and other produce; and to enable the company so to be incorporated to purchase by agreement, and to take and hold lands, tenements, and hereditaments, and all rights and interests therein, for the purposes of their undertaking, and to resell, lease, or otherwise dispose of such lands, tenements, and hereditaments, or such part or parts thereof as may become unnecessary for the purposes of the said undertaking; and also to enable the said company to raise money by shares, loan, or mortgage; and also to enable the said company to become the purchasers of the following letters patent:—that is to say: certain letters patent dated 30th day of April, 1837, granting unto Henry William Crawford, his executors, administrators, and assigns, the sole use of an invention of "An improvement in coating or covering iron and copper for the prevention of oxidation;" with England, Wales, and the town of Berwick-upon-Tweed, and also in all his Majesty's colonies and plantations abroad; and certain other letters patent, dated the 5th day of May, 1838, granting unto Pierre Armand Lecomte de Fontenemoreau, his executors, administrators, and assigns, the sole use of an invention of "An improved method of preventing the oxidation of metals, within England, Wales, and the town of Berwick-upon-Tweed, and also in all his Majesty's colonies and plantations abroad, and to enable the said patentees, and each of them, or the person or persons to whom the said letters patent shall be respectively vested, to sell and assign the same to the said company; and also, to enable the said company to become the purchasers of any other letters patent for the sole use of any invention in coating or covering iron and copper, for the prevention of oxidation, or of any other invention or inventions relating thereto; and to enable the patentees of any such invention or inventions, or the person or persons in whom the same shall be vested, to sell and assign the same to the said company. And also, to empower the said company to purchase and take of any assignment or assignments of any partial or other interest or interests, license or licenses, in or under the said letters patent; and also, to enable the said company to grant licenses, make use of, exercise, and vend, such inventions and improvements; and also, to enable the said company to sell, or otherwise dispose of, the privileges granted by such letters patent, as aforesaid, or any part thereof, or interest therein, respectively. And, in which said bill will also be inserted, the powers and provisions usually inserted in bills of a similar description, and such other powers, rights, and privileges as may be deemed necessary for carrying into effect the purposes aforesaid.  
Dated the 4th day of November, 1847.  
GOODWIN, PARTRIDGE, WILLIAMS, and EDWARDS, Walbrook House, Walbrook, London, solicitors for the said.

**THE PATENT SAFETY FUSE.**  
FOR BLASTING ROCKS IN MINES, QUARRIES, AND FOR SUBMARINE OPERATIONS.—This article affords the SAFEST, CHEAPEST, and MOST EXPEDITIOUS MODE of effecting this very hazardous operation. From many testimonies to its usefulness without the least danger, it has been favoured from every part of the kingdom; they select the following letter, recently received from every part of the kingdom:—"I am very glad to hear that your recommendations have been of any service to you; they have been given from a thorough conviction of the great usefulness of the Safety Fuse; and I am quite willing that you should employ my name as evidence of this."  
Manufactured and sold by the Patentees, BICKFORD, SMITH, and DAVEY, Exeter, Cornwall.

**THE PATENT OFFICE AND DESIGNS REGISTRY,**  
No. 210, STRAND, LONDON.  
INVENTORS will receive (gratis), on application, the OFFICIAL CIRCULAR OF INFORMATION, detailing the eligible course for PROTECTION OF INVENTIONS AND DESIGNS, with Reduced Scale of Fees.  
Messrs. F. W. CAMPBELL and CO. offer their services, and the benefit of many years' experience, in SECURING PATENTS and REGISTRATIONS OF DESIGNS, with the regard to validity, economy, and dispatch—assisted by scientific men of repute.  
Also, in MECHANICAL and ENGINEERING DRAWINGS, whether connected with Patents, Railways, or otherwise, by a staff of first-rate draftsmen.  
Application personally, or by letter, to F. W. Campbell and Co., No. 210, Strand (opposite of Essex-street).

**CITY UNION SLATE WHARF, No. 332, WAPPING.**  
This WHARF, the property of the COOMBE VALLEY SLATE COMPANY, is situated about 100 yards below the upper entrance of the London Docks, and within eight minutes walk of the Thames Tunnel Pier; vessels of 100 tons burden may come alongside the quay, and the whole is entirely under cover.  
The proprietors, in offering the public this site for landing every description of light goods, beg to say, it presents advantages over most other wharfs this side the water, for it is intended as a depot for the sale, as well as the landing, of merchandise. By an arrangement with the agents, goods placed here may be offered for sale without removal to any other place, and a market found at a trifling cost, which, in most instances, is attended with considerable delay and expense.  
The attention of mine and quarry proprietors (particularly those of the western parts of the kingdom) are earnestly invited to this new mode of trading—the agents, in all cases, acting irrespective of parties by whom supplied. Goods will be charged by the ton for landing, and a trifling charge per month for warehouse room. Sales will be effected by the company's agents on commission, or merchants may appoint their own agents, if they think proper to do so. Spaces will be let off at a fixed rental—payable quarterly—to meet the convenience of private merchants or companies. Several very influential mining and quarry proprietors have already made arrangements to avail themselves of its advantages; and it is fully expected, during the present winter, the whole will be filled up.  
A wharf of this kind has long been required—for it is a well-known fact, that many valuable mines in Cornwall, and elsewhere, have ceased to become profitable, in consequence of the proprietors not being able to find a ready market for a great portion of the commodities they produce.  
The following are some of the principle articles that will be always on sale:—Slate, slate for roofing, flooring, paving and slabs of all kinds, manufactured slate in cisterns, cattle troughs, chimney-pieces, cills and copings, stair-cases, managers, &c., tin, antimony, manganese, lead, barrytes, fluor-spar, iron pyrites, ochres, umbers, mineral black, mineral earth, columbite, manufactured colours, white lead, sheet-lead, castings, &c.  
For terms of landing and warehousing, and conditions of commission for effecting sales, apply to the company's agents, Messrs. RICHARDSON & CO., at the Wharf, No. 332, High-street, Wapping; or at the office, No. 5, Whitefriars-street, Fleet-street, City.

**BY HER MAJESTY'S LETTERS PATENT.**  
**FULLER and DE BERGUE'S VULCANIZED INDIA-RUBBER BUFFERS and BEARING SPRINGS for RAILWAY CARRIAGES.**  
THE PATENTEE of this NEW and IMPORTANT INVENTION beg to announce to Engineers, Carriage-builders, and Railway Companies (especially those constructing new lines), that they have now completed their arrangements for SUPPLYING the VULCANIZED INDIA-RUBBER BUFFERS and DRAW-SPRINGS, for Passenger-Carriages, Waggon, Cattle-Carriages, Engines, Tenders, &c., and are prepared to execute Orders to ANY EXTENT.  
On several of the principal Lines these Buffers have now been tried for many months past, under every able superintendence, and with decided success. The patentees, therefore, feel justified in stating, that they are prepared to furnish not only a more efficient Buffer than any hitherto in use, but an item which will effect a considerable saving to Companies in the first outlay.  
Specimens of the various kinds of buffers and draw-springs may be seen, and prices obtained, on application at their office, No. 9, Arthur-street West, London-bridge, or at their depot, No. 2, David-street, Manchester.  
The patentees will also be happy to furnish full information to all communications by letter, together with drawings of the best mode of application.—The attention of Locomotive Engineers is particularly invited to their BEARING SPRINGS for ENGINES and TENDERS, the recent trials of which have proved most successful.

**IMPORTANT TO RAILWAY AND STEAM NAVIGATION COMPANIES, MANUFACTURERS, and ENGINEERS.**  
**W. BROTHERTON and CO.'S PATENT LUBRICATING FLUID (or Animal Oil) FOR ALL DESCRIPTIONS OF MACHINERY.**  
W. B. & CO. have the pleasure to state, that the above article is extensively used in Her Majesty's Steam Navy, and by several of the principal Steam Navigation and Railway Companies, and is pronounced by them, and by the first practical engineers of the day, to be far better adapted for the purposes of lubrication than any other article hitherto used for such purposes. The Patent Lubricating Fluid is equally applicable for the most intricate and fine parts of machinery, as for the heaviest bearings of the steam-engine. It is cheaper, much more economical, and cleaner than oils at present in use; is free from smell, and calculated to effect a vast saving in the expenditure of working steam powers. Further particulars can be had, and testimonials sent, by application to the manufacturers, W. BROTHERTON & CO., Hungerford Wharf, Strand, London.  
N.B.—The above article will burn in lamps, and give a light equal to the best sperm oil.

**FLEXIBLE HOSE-PIPES for LOCOMOTIVE ENGINES, RAILWAY CHIMNEYS, FIRE-ENGINES, GAS, &c.**  
**PATENT VULCANIZED INDIA-RUBBER HOSE-PIPES and TUBING OF EVERY DESCRIPTION.**  
These pipes are made to stand hot-water without injury—are very superior to leather pipes, or the common India-rubber pipes; and, as they do not become hard or stiff in the lowest temperatures, or require any application when out of use, are particularly well adapted for fire-engines.  
FLEXIBLE TUBING, of every description, for gas, chemical purposes, &c.  
VULCANIZED INDIA-RUBBER WASHERS, all sizes, for steam and hot-water joints, &c.—Sole manufacturer, JAMES LYNE HANCOCK, Goswell Mews, Goswell-road, London.

**VIADUCTS and OTHER RAILWAY WORK.**—The attention of Railway Engineers, Architects, and Contractors is particularly directed to the great advantages to be derived from the application of SEYSSSEL ASPHALTE, as the only impervious and permanent covering for arches and roofs, and lining of reservoirs, gutters, &c. The arrangements of CLARIDGE'S PATENT ASPHALTE COMPANY enable it to execute works of an extent with the greatest promptitude.  
In order to guard against the use of spurious materials, it is important that all applications for works to be executed be made direct to this company; and, as a further protection, it is suggested that Engineers, Architects, and Contractors, should require a CERTIFICATE from the company that the proper description of material has been used.  
Information may be obtained as to all works which have been executed by the company since its establishment in 1838, which will prove that the failure of many works represented to have been done with the genuine material has resulted from the substitution of a spurious one.  
Seyssel Asphalt Company, Stangate, London.

**ELECTRIC TELEGRAPH COMPANY.**  
LONDON, 345, STRAND, September 1, 1847.  
COMMERCIAL TELEGRAPH.  
The works of the lines for commercial communications, between the places enumerated below, embracing a SYSTEM of TELEGRAPHS for COMMERCIAL PURPOSES only, and distinct from that reserved for the special use of railways, being so far advanced as to admit of their completion by the commencement of the coming year, the directors think that the time has now arrived, when it becomes their duty to make known the arrangements which they contemplate for the accommodation of the public.  
STATIONS will be OPENED, in central situations, in the PRINCIPAL TOWNS, whence MESSAGES and DISPATCHES will be FORWARDED TO, and RECEIVED FROM, all the OTHER STATIONS of the ELECTRIC TELEGRAPH COMPANY.  
In order to give to Merchants, Bankers, Manufacturers, and all connected with trade, the greatest possible amount of information, a ROOM will be RESERVED in each of the COMPANY'S STATIONS for SUBSCRIBERS, in which will be received, tabulated, and exhibited, all Intelligence of Commercial or Public Interest—for instance:—  
SHIP LISTS, from the various Ports.  
SHARE LISTS, from the various Exchanges.  
PRICES CURRENT.  
STOCK EXCHANGE LISTS.  
CORN MARKETS, from the various Towns.  
PRICES OF LIVE STOCK, &c.  
In LONDON, a CENTRAL STATION, suited to the importance of the metropolis, is in COURSE OF ERECTION in the immediate vicinity of the Bank and Royal Exchange; in this Station the whole TELEGRAPHIC NEWS of the COUNTRY will be CONCENTRATED, and FORWARDED IN EVERY DIRECTION. And here, as in other towns, a ROOM will be RESERVED for SUBSCRIBERS.  
The SUBSCRIPTION to these ROOMS will be TWO GUINEAS per annum, paid in advance, which will entitle SUBSCRIBERS to the RIGHT OF ENTRANCE to ALL the SUBSCRIPTION ROOMS of the COMPANY—including the Central Station at London.  
The foregoing details some of the advantages of the Commercial Telegraph to subscribers; but the requirements of the public in general will be provided for by the establishment of offices, which will at all times be open for the reception and transmission of messages and dispatches; while messengers will be kept at the various stations, by whom dispatches may be sent out to any part of the town where the communication has been received by Telegraph at the Company's Station.  
Subscribers' Names are received at the Commercial Telegraph Office, where any further information may be obtained.  
The following are the Towns to which the Commercial Telegraph will be first extended:—

London	Chester	Southampton	Derby	Darlington
Margate	Liverpool	Winchester	Nottingham	Newcastle
Ramsgate	Rotherham	Dorchester	Lincoln	Berwick
Deal	Barnsley	Bristol	Cheshirefield	Edinburgh
Dover	Wakefield	Gloucester	Sheffield	Glasgow
Folkestone	Leeds	Oxford	Bradford	Scarborough
Canterbury	Halifax	Peterborough	Widnesch	Drillington
Northampton	Bochdale	Yarmouth	Stamford	Stamford
Conventry	Hull	Huntingdon	Cambridge	Norwich
Birmingham	Malldone	Hertford	Chelmsford	St. Ives
Wolverhampton	Tonbridge	Manchester	Ipwich	Ware
Stafford	Gosport	Lancaster	Colchester	

J. LEWIS RICHARD, Chairman.

**MR. R. TREDINNICK, MINING AGENT AND DEALER** IN EVERY DESCRIPTION OF SHARES.  
THREE KING'S COURT, LOMBARD-STREET, LONDON.

**WILSON & FRASER, 2, WELLINGTON-BUILDINGS,** LIVERPOOL, and 13, EXCHANGE-PLACE, GLASGOW, have always ON SALE FIG-IRON, BAR-IRON, RAILWAY CHAIRS, and RAILWAY BARS.

**JAMES LANE, MINING SHARE DEALER,** 75, OLD BROAD-STREET, LONDON.

**BRITISH MINING OFFICES, No. 12, HAYMARKET,** And No. 41, MOORGATE-STREET, LONDON. And No. 4, STAMP-OFFICE BUILDINGS, MANCHESTER. At either of which places PROSPECTUSES and SHARES in the various SILVER-LEAD and COPPER MINES connected with these offices, may be obtained.  
H. TAUNTON, London.  
W. SHARMAN, Manchester.

**ORIGINAL REGISTRY OFFICE, FOR THE SALE AND PURCHASE OF MINING SHARES.**  
No. 28, THREADNEEDLE-STREET, LONDON.  
CROSSMAN, SOMMERS, and CO., AGENTS.  
SHARES FOR DISPOSAL.

Devon and Courtney Consols	Trelawney
East Birch Tor	Wheal Susan
Great Wheal Rough Tor	Wheal Ann (Bridford)
South Wheal Sophia	&c. &c. &c.

SHARES FOR PURCHASE.  
Marke Valley. Wheal Trelawney.

**MONEY.—MESSRS. WINSTANLEY & CO., Sharebrokers,** inform their friends and the public, they make IMMEDIATE ADVANCES, to any amount, on the deposit of English and Foreign Railway Shares, Scrip, and Debentures, upon exceedingly advantageous terms; they also BUY and SELL every description of STOCK and MINING SHARES, at much less commission than usually charged.  
6, Bank Chambers, opposite the Bank of England.

**ASTURIAN MINING COMPANY.**—The board of directors hereby give Notice, that they have made a further CALL of ONE POUND per share upon the shares held in the capital stock of the company, and that such call is PAYABLE at the London and County Banking Company, Lombard-street, as follows:—viz.: 10s., payable on the 4th day of Dec. 1847; 10s., payable on the 4th day of January, 1848.—Interest, at the current rates, will be allowed for pre-payment.  
By order of the board, K. MACKENZIE, Secretary.  
Offices of the Company, 9, Austinfriars, Nov. 1, 1847.

**ASTURIAN MINING COMPANY.**—Notice is hereby given, that the numbers of all SHARES in this company upon which the CALL, due on the 4th of August last, shall not have BEEN PAID, with interest, on or before the 15th day of Nov. inst., shall be advertised as FORFEITED; and, if not paid upon within 15 days thereafter, shall be immediately sold for the benefit of the company.  
By order of the board, K. MACKENZIE, Secretary.  
Offices of the Company, 9, Austinfriars, Nov. 1, 1847.

**NATIONAL BRAZILIAN MINING ASSOCIATION.**—The FOURTH, and LAST, INSTALLMENT of ONE POUND per share, on the MARKED SHARES and SCRIP, will be PAYABLE at this office, on or before Thursday, the 18th inst.  
By order, JOHN KEMPSTON, Jun., Secretary.  
25, Throgmorton-street, Nov. 1, 1847.

**NATIONAL BRAZILIAN MINING ASSOCIATION.**—On PAYMENT of the LAST INSTALLMENT of 41 per cent, as above, the shares and scrip must be left for two clear days, when NEW CERTIFICATES will be ISSUED in exchange, entitling the bearer to the advantage of a share of £20 in this association.  
By order, JOHN KEMPSTON, Jun., Secretary.  
25, Throgmorton-street, Nov. 1, 1847.

**IRELAND.**  
**GENERAL MINING COMPANY FOR IRELAND.**  
Office, No. 2, Burgh-quay, Dublin, Nov. 3, 1847.—Notice is hereby given, that a HALF-YEARLY GENERAL MEETING of the proprietors will be HELD at the office of the company, No. 2, Burgh-quay, Dublin, on Monday, the 6th day of December next, at the hour of Eleven o'clock in the forenoon.  
To receive the half-yearly accounts, up to the 6th of October last, and the auditors' report thereon, and to transact the general business of the company.  
To alter the rules in reference to advertisements and notices.  
To reduce the number of directors from nine to six.  
To elect six directors of the company for the ensuing year, in case the reduction be agreed on.  
To elect nine directors of the company for the ensuing year, in case the reduction be not agreed on.  
The ballot for which will commence at Eleven o'clock in the forenoon, and close at Three o'clock in the afternoon of the above day.  
THOMAS MAGUIRE, Sec.

**PATENT GALVANISED IRON COMPANY.**  
(Trading under the firm of "MALINS & RAWLINSONS.")  
Notice is hereby given, that the directors have this day made a further CALL of TWO POUNDS per share upon the respective owners of the new shares, authorized to be created by the resolution of the special general meeting of the above company of the 28th Oct. 1846. The said call to be PAYABLE on the 28th day of November inst.; and the shareholders are requested to pay the same into the bank of Messrs. Prescott, Grole, and Co., of 42, Threadneedle-street, London.  
By order, S. VINCENT, Secretary.  
3, Mansion-house-place, London, Nov. 12, 1847.

**WHEAL CONCORD MINING COMPANY.**—An EXTRAORDINARY GENERAL MEETING of the shareholders, or adventurers, in this mine will be HELD at Anderson's Hotel, Fleet-street, London, on Wednesday, the 17th inst., at Two o'clock precisely; to receive a communication from the auditors, with reference to the accounts, and on other business.  
25, Fleet-street, Nov. 12, 1847.  
HENRY ENGLISH (one of the auditors).

**ASSAYING AND ANALYSIS.**—Mr. MITCHELL begs to inform the MANAGERS, &c., of MINES, SMELTING-WORKS, and MANUFACTORIES, that he still continues to CONDUCT ASSAYS and ANALYSES of all PRODUCTS, metallurgical and manufacturing, at his LABORATORY, 23, HAWLEY-ROAD, KENTISH TOWN, LONDON, to which address communications are to be forwarded.—Instruction in all branches of assaying and analysis as usual.

**ADCOCK'S PATENT SPRAY PUMP.**—This important INVENTION having been PERFECTED, and brought into SUCCESSFUL PRACTICAL OPERATION at LEWISDEL, at pits belonging to R. J. Bickford, Esq., M.P., Llantrannam Abbey, near Newport, Monmouthshire, the PATENTEE is ready to RECEIVE, and to execute, ORDERS.—Apply to Henry Adcock, C.E., at his office, 137 Strand, London, where pamphlets, descriptive of the invention, may be had; at the office of the Mining Journal, 26, Fleet-street; and through any respectable bookseller.—prices of assaying and analysis as usual.

**COMMERCIAL ELECTRIC TELEGRAPH.**—The only really COMMERCIAL TELEGRAPH is that which may be used for ALL PURPOSES, without restriction—upon which terms Messrs. BRETT & LITTLE are prepared to GRANT LICENSES for their ELECTRO-TELEGRAPHIC CONVERSERS.  
For tickets to inspect, apply to BRETT & LITTLE, Furnival's Inn, London.

**PATENT GALVANISED IRON and WIRE ROPE WORKS,** MILLWALL, POPLAR.  
ANDREW SMITH begs to inform the Mining, Railway, and Shipping interests, that he has obtained a PATENT for an IMPROVED METHOD of GALVANISING IRON, producing a much superior article at a considerable saving in cost—the improved process for galvanising wire rope, adding only £10 per ton instead of £20, under the ordinary process. The rope is extensively used in damp situations, for mining and railway purposes, and for ships' standing rigging.

**GAS.**—The NATIONAL ECONOMIC is the only PERFECT BURNER—the only one in which the principle of perfect combustion is successfully carried out, and which possesses the greatest illuminating power with the least consumption of gas of any burner hitherto invented.—File published opinions of Drs. Ure and Bechhofer, &c. The patentees are desirous that the public at large should judge for themselves as to the truth of these assertions, and not be led away by false representations respecting other burners; an experimental meter is, therefore, provided at the office of PAUL & CO., gas engineers, 12, Leather-lane, Holborn, where the most rigid test is invited.—Description, with diagram and testimonials, forwarded, free.—CITY DEPOT, Hayman's, Monument-yard.

**PATENT IMPROVEMENTS IN CHRONOMETERS,** WATCHES, and CLOCKS.—J. J. DENT, 82, Strand, and 38, Cockspur-street, watch and clock maker, BY APPOINTMENT, to the Queen and his Royal Highness Prince Albert, begs to acquaint the public, that the manufacture of his chronometer watches, and clocks, is secured by three separate patents, respectively granted in 1846, 1847, and 1848. Silver lever watches, jewelled in four holes, 6s. each; in gold cases, from £3 to £10 extra. Gold horizontal watches, with gold dials, from 8s. to 12s. each. DENT'S PATENT DIPLIED SCOPE, or meridian instrument, now ready for delivery. Pamphlets containing a description and directions for its use in each, but to customers gratis.



## THE IRON AND COAL TRADES—IMPORTANT MEETING.

A large meeting of landed proprietors, ironmasters, coalowners, carriers, &c., was held at the King's Head Hotel, Newport, Monmouthshire, on Monday, the 1st inst., in consequence of a resolution to that effect, signed by R. J. Elliott, T. Protheroe, and T. Russell Jones.

chairman after 12 o'clock, and opened the business, by thanking the company for their promptness in complying with the requisition. The object for which they had met, was one of vital importance, and in which their general interests were deeply involved. The Monmouthshire Canal Company had gone into a very accurate investigation of their affairs, in order to ascertain their exact position with reference to the Newport and Pontypool Railway. They had gone into the closest scrutiny, and had come to the conclusion, that the agents at their disposal, and the

to raise, would be utterly inadequate to its completion. The original capital of the company was \$40,000, raised on debentures, 42,837.1—283,777. The Pontypool line was estimated to cost 119,100; this they were empowered to raise, and further debentures of 77,661, making, with those already issued, 120,000. Of this sum, they had so far only been able to raise 38,000. The cost of the Pontypool line would exceed the estimates; and to leave the necessary floating capital to enable them to become a successful railway company.

would be required, which they ought immediately to raise. Under these circumstances, the Canal Company wished to go to Parliament, for an extension of time, for completing the railway, an extension of time to enable them to prepare for becoming carriers, to take powers for raising further sums of money for the purposes of the railway, and to obtain power to raise the rates of tonnage prescribed by the Newport and Pontypool Railway Act, 1845. This last circumstance was of the utmost importance to the freighters. The company knew it was useless to attempt going into the market to borrow money. He (the chairman) and Mr. Powell, were placed in a somewhat anomalous position.

being members of the fiscal committee, and also largely interested in whatever affected the freighters as a body; and, as the representatives of the latter body in the committee, they had thought it right to call them together, in order to elicit the expression of their opinion. If gentlemen concurred in the views of the committee, and were willing to make the sacrifices which an increase of tonnage would involve, he trusted they would say so; if on the contrary, let them at once declare it, that the company might at once know what they had to expect.—In answer to a question from Mr. Cartwright, the Chairman said, the increase intended to be applied for, was one farthing per ton per mile.

Mr. T. BROWN, of Ebbw Vale, was sorry to see the Canal Company entertain such desponding views, for he could not see the slightest reason for such despondency. They had a valuable property, which only required judicious

management to render it profitable; and the present rates of tonnage were amply sufficient to remunerate them; he, therefore, moved the following resolution:—"That the freighters on the Monmouthshire Canal Company's roads, assembled at this meeting, hereby decidedly pledge themselves to oppose: in

every possible manner, any application to be made to Parliament by the Canal Company, by which the clauses and principle of their Act of 1845 are in any way postponed or interfered with, except an application to raise further capital."

Mr. CARTWRIGHT seconded the resolution, and, in the course of his observations, stated, that the dividends of the Canal Company, for 45 years, had averaged 21 per cent.; he also read the following statement:—

The basis for the iron and coal is taken upon the quantities sent to Newport for the year ending the 31st March, 1846.

traffic which may be calculated, although not actually in work before the 31st March, £46, so far as travelling on the Metropolitan roads.

Iron—From Varies Iron Works, 10,000 tons, conveyed 18 miles, at 14d. per ton per mile	875	0	0
Iron—From Victoria Iron Works, 10,000 tons, conveyed 18 miles, at 14d. per ton per mile	1,164	0	0
Coal—From Ebbw Vale, 52,000 tons, conveyed 18 miles, at 1d. per ton per mile	4,225	0	0
Coal—From Abercarn, 26,000 tons, conveyed 16 miles, at 1d. per ton	1,000	0	0

Revenue from iron ore .....	23,350 3 0	1,083 0 0
"    "    "    general merchandise and goods .....	14,961 11 0	
"    "    "    passenger traffic.....	13,283 11 7	23,495 7 1
Deduct one-third for working expenses .....	£27,306 10 4	£61,620 6 0
"    "    "    interest payable on a loan of 46,000 <i>l.</i> at 3 <i>½</i> per cent. ....	1,610 0 0	0—28,616 15 4
		£39,803 10 6
Add interest from 20,000 <i>l.</i> invested in Newport Docks.....		650 0 0
Net revenue available for dividends .....		£23,303 10 6

The following table shows the increase in the trade of Monmouthshire, at the ports of Newport and Cardiff:—

	THE IRON TRADE.				
	1837.	1838.	1839.	1840.	Average.
From Newport	12,000	12,000	12,000	12,000	12,000
From Cardiff	12,000	12,000	12,000	12,000	12,000

From to Cardiff .....	Tons	1836	1837	1838	1839	1840	Average.
Being an increase, as compared with the year 1836 (123,086 tons) of 7 per cent only.		143,510	150,697	152,781	153,002	156,001	
From to Newport .....	Tons	1836	1837	1838	1839	1840	Average.
Being an increase, as compared with the year 1836 (150,538 tons), of 12½ per cent.		143,108	166,722	174,603	194,440	169,518	

	1842.	1843.	1844.	1845.	Average.
Iron to Cardiff .....	Tons 140,022	149,072	162,115	216,766	166,993

	1842.	1843.	1844.	1845.	Average.
From Newport .....	170,338	175,516	190,882	216,687	188,981
Being an increase, as compared with the year 1841 (100,696 tons), of upwards of 10 per cent.					
From New York .....	170,338	175,516	190,882	216,687	188,981
Being a decrease, as compared with the year 1841 (308,684 tons), of nearly 10 per cent.					

COAL TRADE.

	1837.	1838.	1839.	1840.	Average.
Coal to Cardiff . . . . . Tons	226,671	289,061	211,314	348,484	219,362
Being an increase, as compared with the year 1836 (193,241 tons),					of 10 per cent.
	1837.	1838.	1839.	1840.	Average.
Coal to Newport . . . . . Tons	517,066	497,374	518,216	558,104	522,865
Being an increase, as compared with the year 1836 (487,061 tons),					of 7½ per cent.

	1842.	1843.	1844.	1845.	Average.
Tons	325,825	353,108	416,138	521,388	404,115

Being an increase, as compared with the year 1841 (345,457 tons), of 55 per cent.

	1842.	1843.	1844.	1845.	Average.
Coal to Newport .....	Tons 611,504	589,977	648,561	577,614	631,901
Being an increase, as compared with the year 1841 (519,306 tons) of only 2 per cent.					

**THE CURRENCY.**—We have received, from a correspondent, a pamphlet, entitled, *Thoughts on the Currency, with Suggestions for Placing it on a New and firm Basis*, by a resident in Sunderland, which appears to have been published in a quiet, and singularly accurate manner, and for increasing the dis-

may last; and, singularly enough, proposes a plan for increasing the circulating medium of the country, by a system somewhat similar to that proposed by our Bristol correspondent, which we noticed in a leading article in our last Number. The author of the pamphlet, however, takes, we think, too

de a range; without professing to form a decided opinion on the cause of a present monetary disease, he would at once apply the lancet, the blister and the canterbury, with a vengeance, for its cure. He proposes, in the first instance, to sweep away, as speedily as existing interests will allow, the whole

the joint-stock banks, which, he says, "have been of advantage to merchants and others, whose interests can be better attended to in another way; they have, to a great extent, favoured the wild schemes of speculators, ruined the interests of shareholders, and frightened and injured depositors." The Bank

England, the "monster nuisance," is to be treated in the same manner, and the Government to issue paper money on the security of railways, ships, canals, mills, manufactories, land, houses, &c., parties being allowed to borrow to half the amount of the securities which they possess.

amount of the security given. This "British Paper Currency" to be a legal tender in Great Britain, Ireland, and the colonies; and, by establishing a per centage, payable by parties borrowing, he calculates that a Government revenue would be established, equal to 80,000,000*l.* sterling per annum, lessening

pressure of taxation to that amount. He further proposes to unite the colonies still more closely to the mother country, that they should send representatives to Parliament, even Australia, New Zealand, and our Indian possessions, "which would make us better acquainted with their wants and wishes ;

they would become more and more English in their language, manners, feelings, and habits; and the presence of some of their great men in England would be a better guarantee for the peace and order of those provinces, than all the reasons that could be established in the country."

**BURY—TURN-OUT OF COLLIERS.**—On Friday morning, the proprietors of the Hopwood Colliery, near Heap, reduced the price of their coal 1d. per bucket, or 2s. 6d. per quarter; and the wages of the miners, for getting coal,

per quarter. The colliers turned out, refusing to accept the reduction in wages. We understand that, about two years ago, an advance of wages of 10d. per quarter took place, and coals were then advanced 1d. per basket, or 2s. 6d. per quarter.—*Birmingham Advertiser.*

**A NEVER-FAILING REMEDY FOR DROPSY ARE HOLLOWAY'S PILLS.**—Mr. Ellington Leake, chemist, of St. Vincent, who has sold an immense quantity of Holloway's pills, certifies, from his own knowledge, of a most extraordinary cure of dropsy that has been effected upon a person residing in that island by their use. The patient was an

badly afflicted, that, though he obtained the best medical aid of the place, yet he derived no benefit. Nothing seemed to reach the seat of his complaint until he took these purgative pills, which so effectually eradicated it from his system, that he is now as well as ever he was in his life.—Sold by all druggists; and at Professor Holloway's establish-

nt, No. 244, Strand, London.



## GAS AND GAS-METERS.

Mr. DEFRIES gave a lecture on this subject, at the Literary and Scientific Institution, Arthur-street, Old Kent-road, on Wednesday evening last, the 10th inst., which was numerously and respectfully attended. He introduced his subject, by alluding to its extreme importance, as gas, having now become one of the necessities of civilized life, it was a matter of the first consideration that it should be delivered to the consumer in a pure state. He was sorry to say, that some of the companies in London distributed a most impure gas; he would not mention their names, as he hoped they would take the hint, and improve the commodity; as it was now well publicly known, that there was no reason why every gas establishment should not deliver gas to their customers totally free from sulphuretted hydrogen and ammonia; the former gas was most injurious to health, and destructive to ornamental plating and gilding, and particularly to painted walls and oil paintings. Hence, from having obtained impure gas, that light had altogether been excluded from some public institutions, and many private houses. He could, however, bear his testimony to the fact, that there were several of the London companies who supplied gas perfectly free from the above impurities; and why was it not so generally? While he could not but applaud some of the London companies for the excellent gas they supplied, he could not but condemn others for producing some equally impure. But he would not mention names; his object alone was to serve the public; and he hoped, that those companies which had been in the habit of sending out an indifferent article, would see their interests clear enough to effect such an alteration for the future, as would benefit the public and themselves. (Cheers.) The gas then burning in that room he had tested; and he could say, much to the credit of the superintendent of the company, it was perfectly pure. The fact was, when many parties determined to have gas in their private houses, they did so without ascertaining what company was to supply them; and when they discovered its impurities, they abandoned the light altogether. In every establishment in Scotland, they produced pure gas, and so they could in London, if they chose. Sulphuretted hydrogen and ammonia, not only rapidly destroy the meters, and fittings, but passes the burners so rapidly, and, at the same time, cause the meter to register so irregularly, that a burner, which, on one day, perhaps registers 100, may, on the next, with the burner turned on to the same height, and during a like period, register 200. These defects are then laid on the meter-makers; and the cry is, "take away that meter—it's of no use;" while the real fault rests with the gas manufacturer. He was talking with the engineer of one of the gas works very recently, and was told by him, that if he (Mr. D.) had not altered his meter to the new protective rotary valve, the very first time the purifier was neglected to be changed, the first meter brought to be tested, would be rejected. To which Mr. Defries replied, that he did not imagine the engineer would neglect to get his dinner, and that he was not paid 200l. or 300l. a year to neglect doing his duty.

Mr. Defries now proceeded to describe a new plan for the condensation and washing of the gas, as it left the retorts; illustrated by glass receivers, and a glass "Leslie's" purifier; the gas being supplied from a small retort, placed in a tall fire-pan, filled with burning coke. The gas in the crude state, as it leaves the retort, passes through a series of zigzag pipes, immersed in water, which in practice would not be more than 5 feet high, instead of the very tall condensing tubes now in use; by which means Mr. Defries considers the gas is immediately cooled, and perfect condensation ensues; from thence it is conveyed to the washer—merely a reservoir of water—through which it passes, and by well washing only, all the ammonia may be separated. It next enters the purifier, a model of Leslie's, consisting of six compartments, separated by sheets of perforated metal, on which dry slaked lime was placed, to about an inch in thickness. The different degrees of the purity of the gas, as it passed the several chambers, was highly interesting—a dense cloud appearing in the first, while the last through which the gas passed before it reached the gasometer was perfectly clear. Mr. Defries stated, that gas ought never to be of less specific gravity than .400 to .412, or even .420; while, to the shame of some companies he it spoken, gas is supplied in London of not more than .350. He had lately made a tour through Scotland, had visited the works at Glasgow, Paisley, Edinburgh, Leith, and Borrowstounness, and found all of them producing the most pure gas. He mentioned a fact, which shows how gas lighting is appreciated in the "canine north." He received a communication from the engineer at the Borrowstounness Gas-Works, requesting he would wait upon them, as they should want several hundred meters. Mr. Defries accordingly posted off, but on arriving at this small town, was surprised to find only about 12 shops. On expressing this surprise, the engineer informed him that the people in London knew nothing about the matter; the several hundred meters would be required for private families, and even single rooms occupied by working people—as every working man, if he pays but 2s. a week for a room, has the gas laid on, knowing it to be cheaper than oil or candle. The lecturer then called attention to the various dry meters, which had been introduced, most of which were obsolete—Crole's, Edge's, Sullivan's, Noon's, Hutchinson's, &c. He particularly alluded to the latter, one of which he had endeavoured to obtain, but could not in London. It was the meter of the British Dry Meter Company, which company consisted of the chairman and directors of the London Gas-Works, who forced it on their customers whenever they could; but it was so faulty that 400 of them, which had been tried in Devonport, were all taken down again, and were now for sale in that town. He spoke of Mr. Sullivan's meter, which was now obsolete, and said, that it was his opinion, that no dry meter could work well that was constructed with two partitions, as was the case with Sullivan's. The meters of Mr. Crole and Mr. Edge were made like Sullivan's, and, in fact, so much resembled it, that he (Mr. D.) could see but little difference between them.

Mr. Defries had now 18,000 meters in use; and, notwithstanding the improvements he had made, in separating the working parts from the action of the gas, some of it was so foul, that the partitions, or diaphragms, would become corroded in six months; he exhibited a specimen, corroborating the fact. He did not wish to appear too vain of his own production, but he had tested it in every way possible, and found it a perfect meter, and he conscientiously believed it to be the most perfect yet produced. It would act correctly, with a pressure of half-a-tenth, while Hutchinson's required one inch, or ten-tenths; and with such a meter, and a good article, gas was the most cleanly, the most safe, and the most economical of lights. He then alluded to the extravagant manner in which many shopkeepers, who burned gas at so much per burner, per quarter, wasted it; while all who burn by meter had to pay for it—showing that the fairest way for all parties was to burn by meter. As a proof of the necessity that existed of there being a fair system of measurement between the company, as the suppliers, and the public, as the consumers; and that those of the public who burned the gas fairly, and paid for it honestly, should not have to pay for what was wasted by the prodigality or cupidity of others, he instanced the following case:—He recently went into a hairdresser's, to get his hair dressed, and, on observing the gas light in the middle of the day, and a pot of shaving-water boiling over it, he asked the proprietor the meaning of it; to which he replied, that he always warmed his water that way. "Do you burn by meter?" "Oh no; that would not do for me!" "How long have you used the gas thus?" "Oh, I always do it; and in summer, I cook by it, and save the expense and trouble of a fire." "But you pay extra for this accommodation?" "Oh no! that would not do!" To which Mr. Defries indignantly replied, that he considered him to be a rascal and a thief; and the answer he received was, that it was "only smoke;" and what did it matter? (Loud cheers and laughter.) Mr. Defries then observed, that if once pure gas was universally made, it would be universally used for cooking, for warming, and for lighting. The Reform Club already cooked for their extensive establishment by gas—the building was warmed with it, and, of course, lighted by it; and how handy, economical, clean, and comfortable, would it be for the working man, particularly in summer, if, 10 min. before his dinner, his wife could turn on the gas, cook their steak, and turn it off again, until time to put on the kettle for tea. Mr. Defries dwelt but for a moment or two upon his own meter, which, during the delivery of the lecture, was working with admirable precision, as he did not wish to arrogate too much to himself, but would simply say—that there was his child, and he defied the whole world to produce its equal. (Applause.)

Mr. Defries here went through several illustrations of the use of gas in domestic life, in a humorous manner, which called forth much applause and laughter. He then introduced "Leslie's" patent burner, consuming 3½ ft. per hour, and which certainly gave a light equal to an Argand, which burns double the quantity—the principal peculiarity is, what the inventor calls a "combustion chamber," being a glass not more than 2 inches high, but of larger diameter in the body than at top or bottom—the former being contracted to about half. On putting a tall chimney on this burner, not one quarter of the light was given—while, he stated, that it would be found, if examined, that the same quantity of gas was passing and being registered as by the better light. Low's naphthalising apparatus was exhibited, in which the gas passes through a sponge saturated with naphtha, and, taking up a portion, an extraordinary brilliancy is given to the light. Mr. Defries begged to remind the meeting, that by the same rule that gas, in its course, took up the naphtha, and improved the light, so would it take up the water in the wet meter, and not only corrode the fittings and injure the meters, but cause that flickering and jumping of the light, which the good dry meter had done so much to remedy. Mr. Defries stated, that he had a 200 and a 150 light meter at the Thames Tunnel, three for 300 lights each at the Italian Opera, one 1000 light at Cremorne; and, as a sterling proof of the value of the instrument, of which he had the honour to be the inventor and patentee, he begged to inform the meeting, that he had been patronised by Royalty, by Government, by the first-rate

establishments in London, at the Royal Dockyards, and at the Thames Tunnel, his meters had been in uninterrupted action for four years, night and day, which was equal to nearly 40 years of ordinary use. (Loud applause.) He begged, furthermore, to state, that he had two now making for the House of Lords. He concluded, by stating that, in addition to his establishment in St. Martin's-lane, he had a very extensive one in the Hampstead-road, and he had lately opened one at Glasgow—a proof that his meter would find its way. He made some observations on the value of such an institution as the one they were then attending, and expressed a hope that it might flourish, and thus further the propagation of the great truths of science, and amuse, edify, and instruct, the rising generation.

The lecture having lasted more than an hour, a gentleman proposed a vote of thanks to Mr. Defries, for the information and amusement he had given them, which, he assured the meeting, was gratuitous, and must have put him to considerable inconvenience and expense; the motion was seconded, and carried with acclamation, and Mr. Defries having replied, the meeting broke up.

THE GAS MONOPOLY IN MARYLEBONE.—A meeting of the committee appointed by the vestry of St. Marylebone, to consider the subject of the supply of gas, and the application of the Western Gas-Light Company to lay their mains down throughout the parish, took place at the Court-house, on Thursday evening.—A deputation from the Western Gas Light Company, Kensall-green,

stated that they would be prepared to lay down the pipes of the Western Company, and light the entire of Marylebone, in three or four years. Their charge for the public lights would not be cheaper in price than was paid at present, but, as the gas to be supplied would be 75 per cent. stronger than that now used, a vast saving would hence be effected. The private consumers, on account of the purity and high illuminating power of the gas they propose to give, would reap a benefit of at least from 35 to 40 per cent. They would guarantee not to compromise with any existing company.—Mr. BELL wished to know how it was, that the deputation now made a different statement, with regard to price, to what they did when they first came before the vestry? He certainly understood that they were not only prepared to give a stronger and purer gas, but, at least, at two-thirds less in price than was at present paid. That was, instead of their paying 7s., they would only have to pay 4s. 6d. or 5s., per 1000 ft.—Mr. TAYLOR said Mr. Bell was mistaken: they considered their gas would be cheaper consequent on its high illuminating power, and other advantages.—After some deliberation the deputation expressed their readiness to contract for the public lights of Marylebone, at the termination of the present contract with the Imperial Company, in 1849, at the rate of 3l. 10s. each public light per annum, being 1s. less in each lamp than the price now paid.—The deputation having withdrawn, Mr. Bell expressed his want of confidence in the new company, on the ground that they had shifted about with regard to price. Ultimately a resolution was adopted, recommending the vestry to allow the Western Company to lay their mains throughout Marylebone, upon giving full security to the satisfaction of the vestry, within such period as they shall require.

## STATISTICS OF THE GAS COMPANIES OF THE UNITED KINGDOM.

Name of Company.	Date of Establishment.	Rates per 1000 cubic feet at which the Gas has been supplied.		Amount of Fixed Capital at the Latest Date.	Rate per Cent. of Dividend.		Highest and Lowest Price of Coal paid by each Company since established.		
		On the Establishment of the Company.	At the latest Date.		Last Dividend.	Highest Dividend at any Time.	Lowest Price of Coals.	Highest Price of Coals.	
ENGLAND.									
Accrington	1841	10s	8s	£ 5,500 0 0	£ 5 0 0	£ 5 0 0	Per Ton. 13s 6d	Per Ton. 18s 0d	
Ashton-under-Lyne	1825	12s to 10s 6d	8s 6d to 6s	42,500 0 0	13 4 0	13 4 0	7 6	10 4	
Barnsley	1821	13s 0d	7s 6d	6,000 0 0	9 0 0	10 0 0	5 4	6 9	
Bath	1818	15 0	7 0	50,000 0 0	8 0 0	8 0 0	8 1	17 7	
Bilston	1846	6 0	6 0	25,000 0 0	—	—	11 6 av.	—	
Birkenhead	1841	10 0	7 6	36,553 0 0	3 7 6	3 7 6	12 3	16 3	
Birmingham	1825	12 0	6s 8d to 3s 9d	240,000 0 0	10 0 0	10 0 0	4 0	21 3	
Blackburn	1838	9 0	6s to 4s	24,000 0 0	8 0 0	10 0 0	8 0	17 0	
Bolton	1820	12 0	5s 6d to 4s 6d	49,500 0 0	9 0 0	10 0 0	6 4	24 0	
Boston	1825	12 6	8s 0d	8,000 0 0	6 0 0	6 0 0	7 6	10 9	
Bradford (York)	1822	11 3	6 0	45,000 0 0	6 0 0	6 0 0	19 10	33 8	
Brentford	1821	15 0	8 0	57,500 0 0	5 0 0	7 10 0	13 0	14 0	
Bridgewater	1834	15 0	8 4	6,000 0 0	4 0 0	5 0 0	18 6	21 0	
Brighton	1839	10 0	6 0	50,276 0 0	5 0 0	6 0 0	7 6	15 0t	
Bristol	1823	40s to 12s	6 0	40,000 0 0	1 10 0t	10 12 0t	7 7	8 7	
Burnley	1824	12s 6d	5 8	19,946 0 0	—	—	16 8	23 10 canal	
Bury	1826	10 0	7 6	6,570 0 0	—	—	18 3	22 0	
Cambridge	1834	10 0	8 0	32,000 0 0	7 0 0	7 0 0	18 0	40 0	
Canterbury	1822	16 8	6 0	18,000 0 0	8 0 0	12 0 0	9 0	18 0	
Carlisle	1819	15 0	5 0	9,000 0 0	10 0 0	8 10 0	17 0 av.	—	
Cheltenham	1825	12 6	7 0	17,242 10 0	5 18 9	5 18 9	6 0	10 0	
Chesterfield	1823	10 0	7 0	5,000 0 0	7 10 0	7 10 0	9 0 av.	—	
Colebrookdale	1821	15 0	7 3	20,000 0 0	5 8 0	5 0 0	9 6	11 6	
Conventry	1820	10 0	6 6	16,250 0 0	7 10 0	35 0 0	14 0	17 4	
Devonport	1845	8 0	8 0	20,000 0 0	7 10 0	7 10 0	8 0	9 0	
Dewsbury	1840	10 6	7s 6d to 6s	5,000 0 0	7 0 0	7 0 0	15 0	18 0	
Dover	1822	14 0	7s 6d	11,000 0 0	7 0 0	7 0 0	9 0	14 0	
Dudley	1821	15 0	5 0	12,000 0 0	3 0 0	7 10 0	23 0	28 0	
Exeter	1816	15 0	7 6	40,000 0 0	10 0 0	10 0 0	25 0	—	
Farsley	1843	—	—	6,000 0 0	7 0 0	7 0 0	25 0 av.	19 0	
Glossop	1820	7s 6d to 6s 3d	7s 6d to 6s 3d	24,600 0 0	7 10 0	7 10 0	15 6	19 0	
Gloucester	1820	12s 6d to 10s 0d	10s 0d to 2s 6d	10,000 0 0	7 0 0	7 0 0	14 0	—	
Grimsby, Great	1846	10s 0d	6 0	15,000 0 0	8 0 0	8 0 0	4 10	8 8	
Hallifax	1822	13 0	6 0	10,000 0 0	—	—	—	—	
Harrogate	1846	—	—	10,000 0 0	—	—	—	—	
Hartlepool	1846	6 8	6 8	7,835 1 1	7 0 0	7 0 0	17 0	23 6	
Hereford	1824	15 0	10 0	5,300 0 0	4 0 0	4 0 0	8 4	12 10	
Heywood	1826	9 9	5 1	10,000 0 0	7 10 0	10 0 0	9 8	13 0	
Holmfirth	1826	10 0	7 6	8,335 0 0	6 0 0	6 0 0	19 6	24 6	
Ipewich	1821	15 0	7 0	14,000 0 0	8 0 0	8 0 0	18 6	27 0	
Isle of Thanet	1824	15 0	7 6	16,000 0 0	5 0 0	7 10 0	14 10	24 0	
Kendal	1846	12 6	7 6	7,600 0 0	7 10 0	7 10 0	13 6	22 0	
Kidderminster	1818	15s to 10s	10s to 6s	8,000 0 0	5 0 0	7 10 0	11 6	13 0	
Kingston-upon-Hull	1821	12s	6s 8d	11,712 10 0	8 0 0	8 0 0	18 6 av.	—	
Leamington Priors	1838	12s	10s to 8s 6d	20,000 0 0	6 0 0	12 0 0	18 6	—	
Leeds	1816	10s to 4s	5s to 3s	71,827 0 0	{10l. old stock do. new do.}	25 0 0	6 8	13 0	
Leicester	1821	14s to 3s 4d	5s 6d to 4s 8d	—	7 0 0	23 0 0	13 6	19 2	
Lincoln	1829	13s 6d	7s 6d	8,000 0 0	10 0 0	10 0 0	12 0	14 0	
Liverpool Gas-Light Company	1818	15 0	4 6	200,000 0 0	10 0 0	10 0 0	12 1	17 7	
— New Company	1823	4s to 10s	4 6	169,750 0 0	10 0 0	12 0 0	12 6	17 0	
London—Alliance	1829	13s 9d	6 0	90,000 0 0	5 11 1	6 18 10	17 6	28 5	
— British	1810	15 0	7s to 6s	300,000 0 0	6 0 0	8 0 0	17 5	22 5	
— Chartered	1817	15 0	7s 0d	200,000 0 0	10 0 0	10 0 0	17 4	29 3	
— City of London	1817	15 0	7s 0d	200,000 0 0	4 10 6	8 0 0	16 4	23 7	
— Equitable	1831	12 0	7 0	200,000 0 0	—	—	—	—	
— European	1821	17 0	7 0	500,000 0 0	6 0 0	6 0 0	20 0	37 4	
— Imperial	1829	12 0	6 0	130,000 0 0	6 0 0	6 0 0	17 1	21 0	
— Independent	1840	9 0	7 0	180,000 0 0	5 0 0	6 0 0	21 0	24 1	
— London	1844	15 0	8 0	387,000 0 0	5 0 0	6 0 0	26 0	32 0	
— Phoenix	1824	15 0	8 0	20,000 0 0	4 0 0	5 0 0	17 6	32 0	
— Poplar	1821	16 0	6 0	20,000 0 0	5 0 0	5 0 0	16 1	21 6	
— Ratcliff	1823	12 6	7 0	80,000 0 0	5 0 0	6 0 0	17 6	32 0 canal	
— South Metropolitan	1834	11 0	8 0	200,000 8 4	6 0 0	6 0 0	17 6	—	
— Stepney Commercial	—	—	—	—	—	—	—	—	
— United General	—	—	—	—	—	—	—	—	
— Universal	—	—	—	—	—	—	—	—	
— Western	—	—	—	—	—	—	—	—	
Louth	1825	12 6	8 0	6,000 0 0	7 10 0	7 10 0	10 0	17 6	
Macclesfield	1826	12 0	6s to 4s 4d	20,000 0 0	4 13 5	7 10 0	8 1	12 7 1	
Manchester	1824	14 0	5s 6d	235,786 7 2d	15 15 0	16 15 0	10 6	17 8	
Mansfield	1823	9 0	6 1	5,000 0 0	10 0 0	—	8 6	12 0	
Middleton	1845	—	—	5,000 0 0	—	—	10 0 av.	—	
Newark	1839	12s to 11s	10s to 7s 6d	5,000 0 0	10 0 0	10 0 0	12 7	17 0	
Newcastle and Gateshead	1819	5s 6d	4s 6d	65,000 0 0	10 0 0	10 0 0	5 0	6 3	
Newcastle-under-Lyne	1819	7 6	7 6	8,000 0 0	5 0 0	5 0 0	9 0	11 4	
New Mills and Hayfield	1836	9 0	8s to 6s 6d	2,115 0 0	none.	none.	8 8	19 0	
Newport	1821	48s to 13s	6s 8d	40,000 0 0	7 7 4d	7 7 4d	not ascertained.	25 4	
Norwich	1818	12s	5s 6d to 4s 3d	42,500 0 0	10 0 0	10 0 0	6 0	22 0 canal	
Nottingham	1825	12s 6d to 9s 6d	6s to 4s 6d	18,000 0 0	9 10 0	9 10 0	26 0 av.	19 0 canal	
Oldham	1818	21s	8s 4d	8,000 0 0	5 0 0	5 0 0	7 8	—	
Over Darwen	1839	8s 6d to 4s 6d	7s 6d to 4s 6d	25,000 0 0	6 0 0	6 0 0	19 6 av.	—	
Plymouth and Stonehouse	1845	6s 0d	6s 0d	31,800 0 0	5 0 0	5 0 0	14 9	27 2	
Portsea	1821	13 0	7 0	31,800 0 0	5 0 0	10 0 0	14 0	20 10	
Preston	1839	12 6	6s to 5s	12,500 0 0	5 10 0	5 10 0	8 0 av.	—	
Pudsey	1845	7s to 5s	7s to 5s	9,000 0 0	0 6 6	0 6 6	17 3	—	
Radcliffe and Pilkington	1836	10s 0d	8s 6d	10,190 0 0	3 0 0	3 0 0	20 3	24 3	
Reading	1824	6 0	6 0	29,354 15 4	—	—	8 9	15 3	
Rochdale	1825	15 0	7 0	14,000 0 0	6 0 0	10 0 0	13 6	21 0	
Rochester, Chatham, and Stroud	1825	15 0	7 0	5,000 0 0	8 0 0	10 0 0	7 6	8 6	
Rotherham	1846	10 0	6 8	4,000 0 0	5 0 0	5 0 0	15 3	17 9 canal	
Runcorn	1837	10 0	7 6	7,300 0 0	5 0 0	5 0 0	8 4	15 3	
St. Helen's	1832	10 6	6s to 5s	36,581 13 3d	10 8 0	17 4 0	9 0	19 10 canal	
Salford	1818	12 0	6s 8d	38,400 0 0	8 0 0	8 0 0	8 6	10 0	
Sheffield Gas-Light Company	1835	5 0	6 8	76,800 0 0	2 8 0	6 12 0	9 0	9 6	
— New Company	1844	6 8	6 8	129,600 0 0	8 0 0	7 0 0	10 10	15 0	
— United Company	1820	12 0	7 1	10,000 0 0	7 0 0	—	13 0 av.	—	
Shrewsbury	1846	8s 6d to 7s	8s 6d to 7s	10,000 0 0	10 0 0	10 0 0	11 0	19 6	
Stafford	1842	8s 6d	6s	15,000 0 0	4 10 0	5 0 0	20 0	26 6	
Stalybridge	1823	11 1s	6s to 4s 3d	11,250 0 0	7 11 0	8 10 0	14 0	19 3	
Stamford	1837	8s to 7s 2d	7s 6d to 2s 6d	34,200 0 0	8 0 0	10 0 0	5 4	11 0	
Stockport	1822	10s to 2s 6d	7s 6d to 2s 6d	8,000 0 0	5 0 0	5 0 0	13 6 av.	—	
Taunton	1845	7s 0d	7s	14,000 0 0	8 0 0	8 0 0	13 6	8 0	
Wakfield	1822	12 0	5s to 3s	12,500 0 0	8 0 0	11 5 0	8 9	11 4	
Warrington	1822	15 0	8s 4d	18,000 0 0	10 0 0	6 0 0	13 8	20 0	
Warwick	1822	15 0	10 0	15,000 0 0	6 0 0	10 0 0	11 3 av.	—	
Wells	1832	10 0	10 0	4,000 0 0	5 0 0	15 0 0	5 8	14 10	
Wigan	1822	12 6	7s to 6s	10,150 0 0	5 0 0	15 0 0	8 0	12 0	
Wolverhampton	1822	15s to 12s 6d	5s to 4s 6d	11,000 0 0	13 0 0	5 0 0	15 0 av.	—	
Worcester Gas-Light and Coke Company	1818	15s 0d	6s 8d	15,000 0 0	5 0 0	5 0 0	15 0 av.	—	
— New Company	1846	6 0	6 0	15,000 0 0	—	—	6 0	10 9	
York United	1823	13 0	6 8	55,000 0 0	10 0 0	10 0 0	—	—	
WALES.									
Cardiff	1837	10 0	8 0	10,000 0 0	7 10 0	7 10 0	8 6	10 6	
Swansea	1820	10s to 2s 8d	7 0	9,000 0 0	8 0 0	11 0 0	6 0	10 0	
SCOTLAND.									
Dundee	1830	14s 3d	5 5	29,687 10 0	8 8 0	12 12 0	13 1	25 6	
Edinburgh and Leith	1840	8 6	6 6	150,000 0 0	6 10 0	6 10 0	16 8	22 6	
Glasgow City and Suburban	1843	6 8	5 0	150,000 0 0	7 10 0	7 10 0	16 0	22 6	
— Gas-Light Company	1817	10s to 7s	5 0	192,500 0 0	5 0 0	10 0 0	15 0	25 0 canal	
Hamilton	1826	15s 0d	10 0	8,000 0 0	8 0 0	8 0 0	19 0	30 0	
Inverness	1823	19 4s	5 9d	48,000 0 0	6 8 0	8 0 0	13 6	28 0	
Palisay	1833	—	—	—	—	—	—	—	
— Tolcross	1833	—	—	—	—	—	—	—	
IRELAND.									
Belfast	1823	10s to 7s	4s 10d to 4s 6d	35,000 0 0	4 0 0	5 0 0	16 0	23 0	
Drogheda	1846	—	—	—	—	—	19 6 av.	—	
Dublin—Alliance and Dublin Consumers	1846	7s 6d	6s 8d	190,000 0 0	7 0 0	7 0 0	20 4	30 8	
Hibernian	1823	15 0	7 6	—	—	—	—	—	



## Transactions of Scientific Bodies.

## MEETINGS DURING THE ENSUING WEEK.

THIS DAY	Royal Botanic—Inner Circle, Regent's-park	3 P.M.
MONDAY	Statistical—19, St. James's-square	8 P.M.
	British Architects—16, Grosvenor-street	8 P.M.
	Chemical—Society of Arts, Adelphi	8 P.M.
	Medical—Bolt-court, Fleet-street	8 P.M.
TUESDAY	Linnean—Soho-square	8 P.M.
WEDNESDAY	Society of Arts—Adelphi	8 P.M.
	Geological—Somerset-house	8 P.M.
THURSDAY	Royal—Somerset-house	8 P.M.
	Antiquarian—Somerset-house	8 P.M.
FRIDAY	Antiquarian—Somerset-house	8 P.M.
SATURDAY	Antiquarian—Somerset-house	8 P.M.
	Westminster Medical—17, Saville-row	8 P.M.

## On Mining, &amp; the Practical Applications of Geological Science.

PROF. ANSTED'S LECTURES, AT KING'S COLLEGE.

LECTURE V.—ON THE APPLICATION OF GEOLOGY TO ENGINEERING AND ARCHITECTURE, AND THE SUPPLY OF WATER TO TOWNS AND CITIES.

Professor Ansted commenced his fifth lecture, by considering the question of drainage, more particularly with reference to general engineering, which depended, in many cases, very distinctly on the geological structure of the rocks. And it did so naturally, as, for instance, in an ordinary road, properly made, where the drainage would ultimately have reference to the structure of the material and to the rocks in the neighbourhood. With regard to geological structure, it might happen that the beds which came close to the surface would have a strong inclination; and, in that case, where the beds were permeable, the road would be drained naturally; and, where one part lay on an impermeable bed, and the other on a material which suffered the water to percolate through it, an attention to geological structure would enable them to carry off all the water very satisfactorily. This would illustrate the applicability of geological knowledge, even to common road making; but that knowledge was still more directly available in the case of railways, which, running through a long extent of country, involved the necessity of frequent deep cuttings, in the execution of which drainage, as connected with structure and geological considerations, must always come in. Suppose, then, they were to take a transverse section of a railway cutting, similar to one of the diagrams exhibited—if the beds were horizontal, the drainage would be situated in a similar manner with regard to accidents arising from unequal pressure; but if that were not the case, and the bank was composed of mud, clay, sand, or any slippery earth, in beds inclined to the horizon, some parts of the superincumbent mass would be more apt to slip down than others. Some strata would carry water, and others would allow it to drain through; and if the road did not go directly on the strike, in which case there was no inclination as far as the purpose of the road was concerned, there would be a greater tendency to "slip" on the one side than on the other. Supporting the uppermost beds were composed of some heavy material resting upon a bed of sand, the rain, in draining through the sand, would not go away gradually, and a portion of the support being removed, the upper mass would naturally have a tendency to slide down upon the lower part. If once it began to slide, no matter how slowly—if the movement were only an inch per day, or an inch per month—any preventive measures were too late, and there would be a slip sooner or later, and especially in heavy rains, or rains combined with frost. But before the superincumbent mass was set in motion, if by any means the water could be prevented from passing through the sand, it might be prevented. That was best done by cutting a drain on the other side, by which all the water which came on the surface might be carried off before it reached the sand. There would then be sufficient cohesion to prevent the upper part from being set in motion.

A knowledge of geological structure, in making these cuttings, was exceedingly useful, not only in preventing slips, but in reducing the cost of work. For instance, when the dip was in a certain direction, a slip was manifestly impossible, and in that case the slope of the bank might be very much lessened, and the expense of its removal saved. On the contrary, if it was not unusual in cuttings to make the banks in a succession of terraces, but, in this country, that plan, though exceedingly useful, was scarcely ever adopted. It was, however, being partially tried at New Cross, a place where much mischief had been done by slips, and he believed with a prospect of success. That was, however, a plan which could not be carried out without a reference to geological science.

On the subject of embankments the same principles of drainage were applicable, though another element of construction was brought into action. If large masses of material were heaped in a particular way, it might be perfectly safe, and answer the purpose intended very well; while if they were placed in a different way, mischief would arise. The structure of embankments ought also to be regulated by the nature of the rocks on which they rested, as well as those of which they were formed; and although, as yet, few accidents had arisen, engineers might find it worth while to pay attention to this subject. Again, if an embankment was placed on a hill side, there ought to be particular adaptation to the way in which the slope lay. If a heavy pressure were put upon beds so situated, which had already a tendency to slip, that tendency would be increased, and less attention were paid to the drainage, serious accidents would inevitably occur. The kind of drainage required was much of the character of that necessary in ordinary roads—namely, by cutting off springs which had a tendency to run between bands of impermeable rock.

The subject of canals, and the way in which they were affected, introduced another element. In making canals, the engineer would constantly have to cut across springs, and through some strata which would percolate, and through others which actually produced water. In going across a district where there was much leakage, it was necessary to have a perfect knowledge of the nature of those rocks, which yielded water and abounded in springs; and of those strata and substances which were impermeable. On such circumstances depended many great practical difficulties in the construction of canals. It was a remarkable fact, that Mr. William Smith, who flourished about a century ago, and who was called the father of English geology, was himself a mining engineer, and first observed the geological structure of the country, as it affected the formation of canals. His life, lately published by Professor Phillips, his (the lecturer's) predecessor at King's College, would be found very useful and interesting, as it recorded the practical application of so much of geological science as was known at that day.

In the life of Smith would be found some account of the construction of canals in his day, then as important as railways were now. They would see how he brought his knowledge to bear upon the problems at issue, and in that way they might themselves learn how to apply a great deal of that knowledge of geology which they might possess.

Professor Ansted next treated of the supply of water as an engineering subject, apart from the supply obtained from land-springs or small artesian wells, considered under the heading of a comparatively small scale, and rather with relation to agricultural purposes than engineering. The subject of drainage and water supply was, perhaps, connected as much with architecture as engineering; but, when he had discussed its relations to the one, it would scarcely be necessary to touch upon the other.

With respect to the supply of water, he thought he could not do better than to give them a short outline of what had been done lately with regard to the large and most important town of Liverpool, which has been noted, for some time, as a place which was badly supplied with water, and had been more remarkable than any other town in England, for the prevalence of fevers, the more than average illness of its inhabitants, and the short duration of life in the major part of it. The members of the corporation appeared very anxious to do all in their power to remedy that which was certainly one source of those evils—namely, the deficiency in the supply of water. Accordingly, they resolved to obtain an Act of Parliament, empowering them to adopt some measure, which should give the town a larger quantity of that important element. The town was situated on the new red sandstone, and had hitherto been supplied from wells sunk into that stratum, which consisted of a red sand rock, sometimes very soft, sometimes rather hard, intersected with occasional bands of marl, very much fitted with large and continuous veins, often filled up with clay, and many of them completely impermeable. The new red sandstone rested upon coal measures, and certainly contained a great deal of water, which was absorbed from the immediate surface, or drained into it from the hills in pretty large quantities, of which the actual limits were ascertainable, since they knew how much fell from the clouds, and how much was evaporated; and they could calculate how much was lost by drainage into the sea. The supply thus obtained was very insufficient for the necessities of the town, and it was supposed that the quantity could not be materially increased from this source. This point, however, had to be decided upon by reference to the structure of the district, and by calculating whether they got all the available water of the district, or only a part, and it turned out that the latter was the fact. The mode in which this water was obtained was by wells, with horizontal galleries at their bottoms, to allow the admission of a large quantity of water, which was then pumped to the surface. The water obtained from the new red sandstone contained oxide of iron and some salts of lime and magnesia, which made it exceedingly hard, and ill adapted economically for many useful purposes connected with the manufacturing of that neighbourhood, and in all operations in which soap was required. It was very good to drink, but unfit for other domestic purposes. The question was, whether a sufficient supply, even of this water, could be obtained from the district? The proprietors of the wells attempted to show that an increased quantity could be obtained. It was to their interest that they should be the case, and they very naturally believed that it was so—consequently, they made all measures, the object of which was to obtain water from any other source. The corporation gathered all the information that could be obtained locally, and then called upon several scientific men for their opinion; and it is a fact of great interest, as illustrating the present practical position of geology, that it was thought necessary to have the opinion of persons, more noted for their geological knowledge than for simply a practical acquaintance with engineering. Professor Phillips was first invited to give his attention to the subject, but was prevented from doing so by his engagements with the Government. He (Professor Ansted) was then applied to, and after close examination and full consideration, he came to the conclusion that a sufficient supply could not be obtained from the new red sandstone formation, he being of opinion that, though a somewhat larger quantity might be had of the water which fell on the district, yet that would not be nearly enough for the requirements present and prospective of a town like Liverpool. What was next to be done? Then came in that admirer of engineering with geological science, now necessary indeed to every engineer, who wished to do his work satisfactorily, and with the consciousness that, whatever the result, every measure had been adopted which the circumstances of the case would allow. The engineer looked about the neighbourhood far and near, which was the best way to discover where the necessary supply was to be found. One scheme, which met with considerable favour at first, was to take the water from the Bala Lake, in North Wales, and convey it to Liverpool, a distance of 60 miles, by closed canals. Great natural obstacles, however, intervened, and it was found that this plan involved an enormous expense, with the chance of incurring still greater outlay in overcoming several of those natural obstacles, which could not be well estimated until the work was attempted. This scheme, after exciting much discussion, was at length abandoned, and the engineers began to look nearer home. After again considering the supply from the wells, and again convincing themselves of its utter inefficiency, they found they must resort to other means, and thus originated the somewhat celebrated Rivington Pike scheme. The Rivington Pike district presented a hilly surface of 17 square miles, admirably adapted by Nature for such a project. The plan proposed in this case was to take the district and measure its area of drainage, then to estimate the quantity of water that could be obtained from it, and, finally, to consider how the water might be best accumulated. This was a beautifully scientific problem, perfectly practical indeed, but one which had rarely, if ever before, been tried to the extent now proposed. First of all, they had to see whether the quantity of water would be sufficient; and this was effected by accurately marking the water shed, observing where all the hills and streams could be caught most conveniently, and, when caught, considering whether they could be conducted into some small and sufficient reservoir. The model on the table, which was an accurate representation of the district, and which might be seen either by the Ordnance Map, a contour map, or a model. In this case, he was able to exhibit a model, which was the best, but the Ordnance Map was the guide originally used. Having then found the area, the question whether it would yield a sufficient quantity of water to supply the town of Liverpool was next to be decided. This calculation involved a considerable amount of knowledge of

geological structure. It was easy to tell how many inches of rain descended from the sky on a certain space and in a given time; and they had only to multiply that by the whole area intended to be drained, and they would have the exact quantity which fell upon the whole. That was simple enough; but they had then to ascertain what was the nature of the surface on which the water alighted; for, if it were permeable, as sand, for instance, it was obvious that a large proportion would be absorbed and lost; or, if there were many hollows, the water would lie in them and evaporate. These, and other geological considerations, had all to be well considered; but geological science showed that the district, being composed of the bed of hard sandstone, called millstone grit, partially covered over with slaty beds belonging to the coal measures, the whole of it might, for practical purposes, be regarded as impermeable. The sandstone rock, therefore, very soft, was here very hard, a good deal of it being in fact, so that it would allow almost the whole of the water to run off the surface. The consequence was, that almost all the rain that fell ran into the streams, which a further examination showed might be readily collected into two principal reservoirs on the side of the district nearest to Liverpool, which would be 24 miles distant. The natural valleys, in which it was intended to place these reservoirs, had, no doubt, held water before, as the bottoms were covered with fresh water silt. There were also beds of alluvial clay—an additional indication that a considerable quantity of fresh water had at some period been there. By means of two or three embankments, these lower districts would thus accumulate that water, which the structure of the upper districts allowed to run off. The whole of the rain which falls upon an area of 17 square miles would thus be collected, producing a supply of 20,000,000 gallons per day, sufficient for the town of Liverpool were it twice the size, and also for the supply of a more useful and economical article to the mills, bleach-works, and other works in the neighbourhood. Here advantage was taken of the peculiar natural circumstances of the district, to make the most complete use of the water, and to make the most complete use of the water, but which could never have been accomplished, but for a distinct geological knowledge of the structure of the district. Had it not been for a practical application of geological science, that on a certain description of stone the whole of the water would run off, the selection of the Rivington Pike district would never have been made, and the probability was, that Liverpool would have remained for a much longer period suffering from the want of a sufficiency of so vital a fluid. This was a remarkable instance, in which a knowledge of structure had been applied to superficial objects of this kind.

The next subject was connected with materials as required for various engineering operations, and used for a vast number of economical purposes. These he would divide in the same manner as he had divided the various rocks, and he should commence with the clays. Clay was either mixed with limestone or with sand, in various proportions, and was a very important material. All clays contained alumina, but a considerable number of them contained siliceous matter, and some of them, and others, though belonging to the same class, were distinguished by the general application. Of clay, properly so called, there were several distinct kinds. One was the clay found in the shape of soil, chiefly useful for agricultural purposes. In this case it contained, not only of siliceous alumina, the base of all clays, but of limestone, magnesia, potash, iron, &c., and was none the worse for a little phosphorus; while it contained also a quantity of carbon. This admixture was indispensable for vegetation; but for "materials" clays were better without these foreign substances. The most common was considered as a material was a siliceous clay, which was a siliceous clay, with a certain amount of free sand in very variable quantities, which might, however, be easily determined by washing. A good brick clay should consist solely of these materials, without lime or potash, and if the free sand was not in sufficient quantities, it must be mixed with it to make it work; and, generally speaking, the purest, in the common sense of the word, was the best for making bricks. The clays derived from the decomposition of some of the old rocks were particularly valuable, and that derived from the decomposition of slate was generally the best, and was used in certain districts, in the manufacture of fire-bricks. The best kind were the purest, and contained neither alkalies nor salts, either of which make it run, in the great heat to which it was subjected in the furnaces. The presence of such substances helped the action of the fire, and the surface of the brick would be turned to glass. Pure clay and sand was thus the best for fire-bricks, and it was obtained, as he had observed, from slate. The London clay, one of the tertiary series, was for the most part tolerably well adapted for bricks—indeed, all London was built of it; but it was not well suited for the making of engineering bricks, then it contained many impurities, the most of which were the ingredients which might be separated from it, generally it was not worth the trouble and expense, as there was no great difficulty in obtaining clay for fire-bricks.

Another of this class was called pipe-clay, or potter's clay, and was used in the manufacture of the rougher kinds of earthenware. This was a most useful material, and did not require to be so carefully selected as that used for fine pottery and porcelain. It contained a considerable quantity of water, and it was unclean and soapy to the feel. It was a siliceous clay, and was used in certain districts, in the manufacture of fire-bricks. The best kind were the purest, and contained neither alkalies nor salts, either of which make it run, in the great heat to which it was subjected in the furnaces. The presence of such substances helped the action of the fire, and the surface of the brick would be turned to glass. Pure clay and sand was thus the best for fire-bricks, and it was obtained, as he had observed, from slate. The London clay, one of the tertiary series, was for the most part tolerably well adapted for bricks—indeed, all London was built of it; but it was not well suited for the making of engineering bricks, then it contained many impurities, the most of which were the ingredients which might be separated from it, generally it was not worth the trouble and expense, as there was no great difficulty in obtaining clay for fire-bricks.

There was another and finer kind of clay, called Fuller's earth, used in the fulling of cloth, on account of its power of absorbing grease readily from woollens. It contained an unusually large quantity of silica, as compared with the ordinary pipe-clay, the proportion of the latter being 48 per cent. of silica, and 33 of alumina, while that of the former was 60 per cent. of silica, and 20 of alumina. It was made up of iron (about 1 per cent.), magnesia (1 per cent.), and water (24 per cent.). Fuller's earth was derived from the Weald clay at Nettlefield, in the neighbourhood of Reigate, and from the lower part of the Collier's Hill in Wiltshire. In each case there was a considerable variation in the colour, occasioned by the condition of the oxide of iron; but the texture was the same, and the colour was a matter of very little consequence.

There was another important material, called porcelain clay. This was derived from decomposed felspar, obtained generally from gneiss, or granite. It was the purest of all the clay rocks, being a pure siliceous clay, consisting of 60 per cent. of silica, and 40 of alumina. A large quantity (9000 tons annually) of the finer kinds was obtained in Cornwall by artificial washing. Besides this, upwards of 25,000 tons of the coarser kinds was obtained from beds formed by the natural washing of the rains. The decomposed felspar was mixed with water in the artificial process, and moved along at a certain velocity, when the whole was gradually deposited in the shape of porcelain clay. The coarser parts were deposited first, when the mass moved most rapidly; next, the finer parts, as the mass moved more slowly, and, lastly, the finest of all, the felspar, which was deposited by the action of the oxide of iron, which was present in them in considerable quantities. These, however, were not important as materials.

From some clays, the substance called alum was derived; but that, like the ochres, was not an important material, geologically speaking, although interesting from the chemical process by which it was obtained. The talented lecturer concluded by briefly describing this process.

[This last lecture, in which Professor Ansted described the derivation and nature of other building materials, such as stones, ornamental and otherwise, and the practical application of geology to quarrying, and the selection of healthy and alluvial sites, will appear at length in our next week's Journal.]

## THE CHEMISTRY OF THE METALS—No. VI.

BY J. LOUIS JULIAUX.

[Written for the Westminster Chronicle—Continued from Mining Journal of last week.]

## METALS WHOSE OXIDES ARE REDUCED BY HEAT ALONE.

**MERCURY.**—Mercury is a fluid at all common temperatures. In appearance it is a brilliant white metal, having the cast of silver; hence the name of quicksilver. It has been known for very remote ages. The ancients supposed it to be either gold or silver in a state of combination with some other substance, and the greater part of the alchemical researches were to point out the method by which the flying bird was to be united to the red eagle—i.e., uniting mercury to sulphate of gold. Mercury is 13.5 times heavier than water; it is solid and malleable at below zero, 40°. It contracts in cooling; it boils at 629°; and is converted into vapour at 676°.

Mercury is sometimes adulterated with lead, tin, antimony, and bismuth. These adulterations may be very readily detected, by evaporating a small quantity in an iron ladle, or spoon, when, if the mercury be adulterated, it will leave a residuum. Another method is to press the mercury through a piece of chamois leather. This is the process generally followed for cleansing gums from lead. The mercury is to be well shook in the barrel, and afterwards pressed through leather. Mercury is found native in all mines which produce the sulphuret, in small globules; but by far the greater portion is produced from the sulphuret, which is reduced in the following manner:—A mixture of iron filings, lime, and native sulphuret of mercury, in equal proportions, are placed in a retort, and an additional proportion of the lime is then placed on the top of the materials, in order to complete the decomposition. The retort is then attached to a receiver, and the whole carefully heated to a full red heat, when metallic mercury distills. The theory of this is, that the iron takes the sulphur from the mercury, and becomes sulphuret of iron, while the lime combines with any sulphuric acid that may have existed as sulphate, and thus having liberated metallic mercury, it is volatilized and condensed in the receiver. Mercury is of the greatest importance in medicine; it is administered in all possible shapes and forms, but the preparation most in use is the chloride, or, as it is commonly called, "calomel." This is prepared by mixing sulphate of mercury and common salt together, and subliming the chloride from it in a vessel constructed for the purpose. Another method is to mix metallic mercury with the bichloride, a preparation called "corrosive sublimate," and then subliming. To distinguish calomel perfectly pure, a small quantity should be placed in a spoon, and exposed to the heat of a spirit lamp, when it should all be converted into vapour.

Another form in which mercury is given in medicine is "blue pill." This is merely mercury in a fine state of division. To prepare it, mercury and a solution of roses are triturated together in a mortar, until thoroughly incorporated; it is then made of the requisite consistence with liquorice powder. Of the oxides of mercury, the peroxide, or "red precipitate," is of the most importance; it is prepared from the nitrate by the aid of heat. Fulminating mercury is prepared in the same manner. As the corresponding compound of silver, it is used very largely in the manufacture of percussion caps and detonating balls of various descriptions. In preparing it, the greatest caution is requisite, as the most frightful accidents have resulted from very trivial causes. There is an instance of a man exploding in the mine state, which resulted in the death of Mr. Hensel, of the Apothecaries' Company, London. This talented chemist was preparing a quantity of fulminating mercury in the open air, when, from some unexplained cause, the whole exploded, literally blowing him to atoms, as parts of his body were found many yards from the spot at which the accident occurred. Mercury combines with most of the other metals, and forms a class of substances called "amalgams," many of which are crystallizable. It is used in very large quantities for looking glasses; they are prepared in the following manner:—A sheet of perfectly white tin is laid upon a flat board, and a small quantity of mercury is then rubbed upon it with a hard foot. This immediately combines with the tin, which becomes exceedingly brilliant. The glass, having been perfectly cleaned, is then slipped on, so as to obtain perfect contact. It is then pressed, and, finally, the remaining portion of the mercury is then expelled by heat.

Nickel is found associated with arsenic and cobalt; it is used in enamelling and for colouring glass, but is not, as yet, of sufficient importance to be noticed in these pages.

[To be continued in next week's Mining Journal.]

## Mining Correspondence.

## ENGLISH MINES.

**BARRISTOWN.**—Enclosed you have our setting list for November month. We have so far completed the Slob shaft to the 18 fm. level, as to be able to resume driving the 12 fm. level end, and shall in a few days commence driving the 18 fm. level also west; the winze, on the main lode, behind the 18 fm. end, is at present not sinking, in consequence of the men taking stops from the ends of it, those stops are worth 82 per fm.; the stops under the 18 fm. level (Doyle's), are a little improved, worth 144 per fm.; the stops in the back of the 18 fm. level, new discovery, are worth over 902 per fm., looking very regular and well for 3 or 4 fms. in length. The stops in the back of the 12 fm. level are worth about 104 per fm.; on middle lode, under this level, the stops are worth about 82 per fm. In the adit end east, the lode is large, 2 ft. wide, thickly mixed with lead through the white iron.—Nov. 5.

**BEDFORD UNITED.**—At Wheel Marquis, the lode in the 90 fm. level east, is still worth 804 per fm.; the south lode, in this level west, is worth 204 per fm., and the north lode is worth about 132 per fm. In the 80 fm. level east, the lode is 2½ ft. wide, good saving work; in Hooper's winze, in this level, the lode is small, and unproductive. The lode in the 70 fm. level east is 2 ft. wide, good saving work; in Harvey's winze, in this level, the lode is 2 ft. wide, composed of spar, munda, and ore. Hooper's rise, in the 58 fm. level east, is stopped. The lode in the 25 fm. level, east of the south engine-shaft, is 2 ft. wide, producing good stones of ore. The adit level east is without alteration.

**COATLITHE HILLS.**—But little alteration has taken place here since I last wrote. The level, west from A shaft, has been driven nearly a fathom; the vein in the end is about 12 in. wide, composed principally of clay, with stones of lead ore intermixed. I have been making inquiries respecting the extent of the old workings, and find but little has been done—water having prevented them from exploring very far in the hill.—Nov. 6.

**COOK'S KITCHEN.**—On Chapple's lode, we have commenced driving the 150 fm. level, west of the engine-shaft, on a very large lode, producing a small quantity of tin. In the 180 fm. level west, the part of the lode on which we are now driving, is 4 ft. wide, and worth about 304 per fm.; in the 180 fm. level east, the part of the lode which we are carrying is 3½ ft. wide, and worth about 82 per fm. In the winze, sinking under the 170 fm. level east, the part of the lode which we are carrying is 3½ ft. wide, and worth 54 per fm. The tributors department is about the same as when I last wrote. We have again resumed clearing the adit west on the Druid lode, the men having finished raising stone for the new wheel-pit. The masons have commenced building the walls of the new wheel-pit, which will perhaps occupy about a month, and in the meantime the other work connected with it will be in progress, and ready to put in at the proper time. We shall go to smelting-house next Wednesday, and shall take away about 20 tons of tin (or, if possible, something more), which will make rather more than 25 tons for the month.—November 8.

**COOMBE VALLEY-SLATE QUARRY.**—We have now sunk down 56 ft., and the deeper we sink, the better the floors of slate appear; the courses of waste are much thinner and easier to break through—many good slabs have been raised this past month from 6 ft. to 8 ft. in length, and quite solid. We are making every kind of slate in general use; we have a cargo at the harbour ready for London, but we experience a difficulty in procuring vessels to take in freight at this season, in the Bristol Channel; we hope, in a very short period, to be able to execute many of the numerous orders now on hand; we have this week made the last deposit on the purchase of the freehold, and the shareholders may congratulate themselves in having, by easy means, obtained a valuable property; should nothing intervene to mar our present prospects, I entertain a certain hope a dividend may be declared at the end of the first year's working. The beautiful quality and colour of our slate, causes a continual inquiry for supply by many of the London builders.

**CUBERT SILVER-LEAD.**—The lode going east, in the 35 fm. level, is 2 ft. wide, of hard spar, munda, and stones of lead; in the same level, driving west, the lode continues large, and worth from 122 to 142 per fm. The lode in the 25 fm. level west is 1 ft. wide, chiefly munda, with stones of ore—a promising level. In the 15 fm. level, going west, the lode is 1 ft. wide, worth 32 per fm. The ground in the engine-shaft is much as usual. The tributors are working well, and in general, we believe, earning good wages.

**DEAN PRIOR AND BUCKFELTLEIGH.**—We have fixed the pitwork to the bottom level, and have this morning put the 40-foot water-wheel to work, being laid out in excellent order. I expect to fork the water to the bottom level in the course of three or four days, while at the same time the sumpmen will be making the necessary preparations for forking the water below the bottom level, and also putting in the ladders and casing in the engine-shaft; I hope there will be no delay, as it regards the sinking the engine-shaft below the bottom level, and that the pumps, &c., may be here in time; the walls for the 24 ft. wheel-pit being completed, we shall proceed to take the wheel apart, and to refix the same, and also we shall get on with all the necessary work with all possible despatch.—Nov. 8.

**DEVON AND COURTENAY CONSOLS.**—In our 80 fm. level, driving west, the lode continues much the same as my last report; there are still some good spots of ore, mixed with killas and spar. In our deep adit level, the lode is 2½ ft. wide, composed of spar, munda, and spots of ore. The lode in our shallow adit level, east of the shaft, on the north lode, is 2 ft. wide, composed of munda, spar, and white iron. The ground in the engine-shaft continues just the same as it has been for the last two or three fathoms—strong killas, mixed with layers of spar. The pitch in the back of the shallow adit level, on the north lode, continues to produce some good work; I have also set a pitch to two men, on this same lode, in the bottom of the shallow adit level, at 10s. in the 12, for lead and copper ore.—Nov. 2.—In our 80 fm. level, driving west, the lode is 2 ft. wide, composed of small branches, with spots of ore, mixed with killas. The lode in our adit deep adit level is 2 ft. wide, composed chiefly of spar and small branches of lead ore. In the shallow adit level, on the north lode, the lode is 2 ft. wide, composed of spar and munda, with spots of copper ore; the pitches in the back and bottom of this level, on the north lode, continue to produce some good lead ore. Our engine-shaft is progressing satisfactorily, being now more than 8 fms. below the 30 fm. level.—Nov. 9.

**DRAKE WALLS.**—At Brenton's engine-shaft, the branches are large and tiny, but not rich; the stops, east of the above, are producing good work. The 50 end and tinny, and the 40 end east is producing good work. The 40 end, west of machine shaft, good work; and the stops, east of ditto, are also in good work. The stops in the 33 fm. level, east of machine shaft, in good work; the 33 end east not so good as in last report. The north lode, in the eastern part of the mine, is still large; the south part, on which we are driving, is at present disordered by a large flood. I presume you have the selling paper before this. The engine is not yet arrived from Godolphin. We hope to sample 20 tons of tin for October: our crushing gives us the greatest satisfaction.—Nov. 8.

**EAST CROWDALE.**—The ground in the cross-cut north, in the 47 fm. level, continues hard and difficult to drive; we have cut a branch in this end, which produces some good stones of ore. The lode in the adit level west, at Rix Hill, is about 2½ ft. wide, composed of peach, spar, capel, munda, and spots of tin, a very kindly lode, but not rich. The ground in the cross-cut south is favourable for driving, and from appearances we cannot be far from the middle lode. I am glad to state that the lode in the shaft, sinking below the adit level, continues to increase in size and quality, is now upwards of 6 ft. wide, composed of peach, capel, spar, munda, and tin—in fact, we have a splendid composition of tin, and every appearance of being a lasting one. We have broken the best work to day that has been broken since we cut the lode—rocks of tin as much as a man can lift. Our engine and pit-work in good order.—Nov. 6.

**GREAT HEWAS CONSOLS.**—Our pay-day was yesterday, and Capt. J. Cartwright will send you an account of the financial department. As to general mining matters, I am happy to state, we are progressing very favourably—having already engaged 45 tributors; and, in less than a week from this time, I think we shall have employed 60 at least; and, by the 24th inst., perhaps nearly 60. We are losing no time in developing the mine, and in furthering the interests of the adventurers generally. Reports stated that the 86 fm. level was extended throughout the mine; and, on the 25th Oct., we had pumped out the water 4 ft. under that level at the pump; we, therefore, concluded that, at Stanley, we should begin clearing the levels, &c.; but, since then, we find the report to be 39—consequently, we have dropped the lift 3 fms. deeper, and expect to be in fork on Monday next. The pitches generally are looking well, and the tributors working manfully. In the bottom of the adit, west of Cartwright's, we found the old bottoms worked, I should think, by the appearance of the timber, 200 years ago. The lode there is of a very promising character, from 2 to 4 ft. wide; we have set a pitch there to 4 men, at 10s. No work has been done on the Hewas lode, in this part of the mine, deeper than these bottoms; Cartwright's shaft is sinking for the purpose of making backs here, and the proposed cross-cut from North's will also intersect the lode at the 86. We think, from the appearance of the lode, that men could earn good wages at 7s. in 12, if we had a back. A pitch is also working on the side of Cartwright's lode, south of east shaft; after starting it the third time, 12s. is given for this, but from recent improvements, it would do at this time at 8s. You must know, however, that in getting tributors to work at first, we have many difficulties to encounter. Yesterday we set the iron ore to raise, at 2s. 3d. per ton, from which you will be able to infer what sort of a lode we have.—Nov. 6.

**GREAT MICHELL CONSOLS.**—The lode in the camp winze is 5 ft. wide, although not so good as when last reported, it is producing good saving work. In the 35 fm. level, west of the camp winze, the lode is large, the part now being carried is 4 ft. wide, containing abundance of very strong munda, intermixed with black, grey, and yellow ore, yielding some saving work, altogether, exceedingly promising; we have now at surface about 35 tons of ore.—Nov. 9.

**HARROWBROW OLD MINE.**—All the plant has been removed from the lower mine (save the dressing floors, which have been retained to return



**SOUTH WHEAL TRELLAWNEY.**—In the statement of assets and liabilities, appended to the account, submitted to the general meeting, on Tuesday, 2d inst., appeared as if there was 407*l.* 9*s.* 7*d.* due from the mine, in addition to the balance of 233*l.* 7*s.* 11*d.*; when, in fact, deducting cash in hand, 52*l.* 1*s.* 8*d.*, and calls unpaid, 122*l.* left the balance against the mine, as therein stated, of 233*l.* 7*s.* 11*d.* only.



## THE CARADON DISTRICT.

Sir.—In the last Number of your valuable Journal, there is a letter from "An Adventurer," desiring a description and specification of the mines in the Caradon district, with their relative situations, to whom I beg to direct attention to a geological map of the said district, by Mr. N. Whitely, land surveyor of Tzaro, drawn from actual survey, with the assistance of several intelligent agents in that neighbourhood. The map is a valuable document, in which the outlines of the mine sets are accurately defined, and all the lodes, cross-courses, and elvan dykes, laid down according to their true direction. The situation and boundaries of the different strata are also clearly traced, and, I think, in it "An Adventurer" will find all the information he requires.

London, Nov. 2.

J. B. C.

## GREAT WHEEL MARTHA MINING COMPANY.

Sir.—I cannot help expressing my surprise at the simplicity of your correspondent "Geologus," who has again occupied a space in your Journal. He has taken the trouble to count the line in which I have quoted his letter correctly from your paper, but in which he informs me I have taken advantage of a typographical error. What advantage, pray, let me ask him? What difference does it make to my argument, whether he really meant "the proper depth for ore, or for one" (meaning a level, I presumed; but it was difficult to understand almost any of his "jumble of words," to which he himself finds it necessary to give a second explanation)? I am glad, however, to hear that the agents of the company were really looking for ore, by driving the shallow levels to such an extent at the Wheel Martha. "Geologus" says, "the recommendation to give advice, previously to results being obtained, was not intended as a hint to gain information." Was he so short-sighted, as not to see that I was quizzing him? Now, with all due reference to his "professional knowledge," I will assert, that several "practical agents," who visited the Wheel Martha set, declared, long ago, that the company were throwing their money away, and that there was no chance of successful results from the operations which were going on. Why has not any of the large extent of ground, comprising the set, been explored, and the workings confined to one small spot only? I have been told by a well-known and experienced miner, who walked over the ground many months ago, that he and his friend expressed great astonishment to each other as they went along, at the highly-favourable indications across the valley, of which no notice whatever was taken. "Geologus" says, again, that "he (the practical agent) is not able to adopt a better plan for her future development, than has been laid down by the company's agents," so the "company's agents" said years ago, and so their mismanagement may be again exposed. But I hope the directors, for their own sakes, as well as that of the shareholders, will see the absolute necessity of displacing those who have hitherto been entrusted with the "practical" operations of the mine, and that they will appoint men every way well qualified to take that situation. Experience does, as the Latin proverb says, and no experience had such an effect, as when it is of an adverse nature—so let the directors profit by the past, and provide as much as possible against future mistakes. I have only further to say, that I understand the "practical agent" is to communicate to you, Mr. Editor, on the subject of the Wheel Martha Mine, when he will, no doubt, be able to support his opinions by facts, and when he will undeceive "Geologus," as to who and what he is. In the meantime, as far as regards personal friendship, I can still sign myself, as before,

AMICUS NEUTRO.

London, Nov. 11.

## TAVY CONSOLS MINE.

Sir.—I would wish, for the benefit of my brother shareholders, to inform them briefly the state of the mine, as a caution not to be too easily biased in the disposal of their shares—seeing that no further calls are needed, and all the machinery and erections paid for. Knowing this, I am surprised at the low quotation in your list, as I have refused 4d. 10s. per share this week, and would have declined 5d., had it been offered. She sampled, at the last time—about three weeks since—180 tons; and, on the 18th inst., the captain states he will be ready with 50 tons more, for that purpose. In sinking from the 24 ft. level, the lode continues to increase in size and richness, and promises fully to warrant the most sanguine expectations as to the result in the bottom of the shaft; and, when in the mine, I witnessed frequent lumps of yellow ore brought up, exceeding 2 cwt. each.—H. Goss: Plymouth, Nov. 11.

## WHEEL CONCORD MINING COMPANY.

Sir.—You have occupied much space, of late, in directing attention to the affairs of the Wheel Concord Mining Company; and, from a letter of Mr. H. English, one of the auditors, I was led to suppose that a meeting would take place on an early day. Since the publication of that letter, I am given to understand, a requisition, signed by the holders of 400 shares, or two-fifths of the number of which the company is composed, has been transmitted to the pursuer. I believe, according to the laws adopted in the cost-book, ten days' notice must be given. Now, as the time is so far advanced, since the transmission of the requisition, it is clear the meeting, if called, will not be legal. It does, I must confess, appear to me, that a game is being played by the pursuer, the secretary, the clerk at the mine, cum multis aliis, not only to deprive us of our rights, but to subject us, not only to obloquy and disgrace, but to a heavy charge on our purses, to defray the amount owing—to which, I presume, as a matter of course, we may add law charges. May I ask, through you, whether the pursuer and secretary are paid, now that the mine is abandoned? and, moreover, whether the accounts have ever been audited? I think, if a meeting be not called by the committee, it is, at least, the bounden duty of the auditors to call one, and explain their position, and that of the company.

A SHAREHOLDER AT A PREMIUM.

London, Nov. 11.

[We insert the above, but trust that matters may be so arranged as to preclude any further discussion. We find, by an advertisement, in another column, that a meeting will be held on the 17th inst., when, we hope, such explanations may be afforded as will render any further claims on our columns unnecessary.]

## WHEEL CONCORD MINING COMPANY.

Sir.—Having seen a paragraph in your paper, dated the 3d inst., signed "J. R. (an Original Shareholder)," relative to monies being remitted to me by the committee, to discharge the liabilities of the mine, I feel it my duty to reply thereto. I beg to state that I only received remittances from London for four months—being July, August, September, and October, 1846—and then not sufficient to discharge the full cost; the latter two months were only enough to discharge the labour cost, and which was done. There were also many bills deducted from the two former months (July and August), which were to be paid in London—consequently, the only vouchers I have to produce will be a few for July and August, which I am ready and willing to transmit, on being required to do so by the auditors. In retaining the vouchers, I did so by the instructions of the pursuer, conveyed through his representative, being requested not to part with, or deliver, any vouchers, except to him. I have only, in conclusion, to observe, that I am perfectly ready, not only to furnish the vouchers in my possession, but to afford every facility to promote the objects and interests of the company; but it will be at once seen, that I have been placed in that dilemma, which precluded me from acting as I should have done, if left alone. It is said, "No man can serve two masters," and hence the delay with reference to the transmission of the vouchers in my possession. Having, however, received a letter from the secretary, I am prepared, and shall transmit them. I think it only right to draw your attention to the circumstance, that the remittances made to me were only for four months, and, consequently, I am in no way responsible for monies remitted to other parties. I must, therefore, leave it to the pursuer, or captain, who may have received the same, to explain, my only object in addressing you being to disabuse your mind, and that of others, of any act of dishonesty, or concealment, on my part.

Woodswood, Tavistock, Nov. 10.

THOMAS WHEELER.

## CARADON WHEEL HOOPER MINING COMPANY.

A general meeting of shareholders, was held at the White Hart Inn, Launceston, on Tuesday, the 24th inst., when the accounts were produced, showing—August and September cost, 3694. 4s. 8d.—By calls received from August 31 to 1st November, 3371. 8s. 2d.—leaving balance against the mine, 412. 10s. 6d.—to which is to be added, outstanding bills, 3512. 4s. 9d. The arrears of calls amount to the large sum of 4321. The pursuer was directed to take instant steps to enforce the payment of balance due from Mr. Martin to the adventurers, when he ceased to be the pursuer; and also to apprise each defaulter that he would be served with a writ without further notice, unless his calls are paid within 7 days. A call of 1s. per share was made; and the following report read to the meeting:—"Since my last report to the Mining Journal of the 12th October, there is an improvement in the caunter lode, west of the 50; my object in driving this level was to intersect the granite, to see if the lode did continue regular or not, as I had heard it hinted that it would not; this being accomplished, we find the granite to be soft, such as is congenial to copper; the lode much improved, being more settled and compact, with good walls full 2½ ft. wide, underlying north about 2 ft. in a fathom, with the most encouraging indications; it is composed of large quantities of rich looking mundic, folspar, quartz, peach, pryan, and can, interspersed throughout with rich yellow copper ore, specimens of which I have forwarded for your inspection, thinking this would give you great satisfaction. This ought to encourage you to sink the shaft 10 or 12 fms. deeper, to put it to the granite, as you may be well assured that the lode now alluded to, will handsomely reward you for the outlay. We have about 2 fms. more to drive to cut Dave's and Carpenter's lodes; the end here is very wet—this shows that the lode is not far off."

## HOBB'S HILL MINING COMPANY.

At a meeting of adventurers, held at Linkard, on the 28th Oct., the pursuer's accounts were examined and passed; they are of a most singular character, without a figure of explanation, as follows:—"Total expenditure to the present time, 8492. 15s. 4d.; due on five shares (parties bankrupt), 364; due on four shares (parties unknown), 284; due on Thomas's shares, 312; together, 944; other arrears, 128. 16s.; liabilities, about 304; leaving about 362. 16s.

in favour of the mine, supposing all the calls were paid."—It was then resolved, that the wheel, lately purchased at Wheel Gill, with 12 stamp heads, and other necessary works, for dressing and preparing the tin ore for the market, be immediately erected; that the pursuer do give notice to all persons in arrears of any call, that the same be paid within a fortnight, after which all defaulters to be sued in the Liskeard County Court; that call of 12 per share be now made, payable to the pursuer on or before the 10th inst.; and that a general meeting be held in Liskeard in about two months hence.—The following agent's report was read:—"Since the last meeting, on the 5th of August, we have sunk the shaft to the 30 ft. level, and carried down all the necessary works to the bottom of the mine; we have also driven the eastern end, at this point, about 10 fms. on the course of the lode—it has varied from 2 to 3 ft. in width, producing a sufficient quantity of tin to warrant our dressing it. Though not rich, I have reason to believe it will leave us some profit, and aid us in the expenses of the other works of the mine. Under these circumstances, I recommend the immediate erection of a 12-head stamps—the cost of which, with all other apparatus for dressing tin, will probably not exceed 600. The value of one and half ton of tin will pay for this; and I may fairly venture to undertake to return that quantity per month, when the stamps are at work, unless a decided change for the worse takes place, which I have at present no reason to fear, as the mine has gradually improved in depth; but, supposing the worst that can be anticipated should follow, and all the tin should vanish at the points we have now reached, and no other metal should appear, even then I believe we have tin enough to pay for the stamps—so that, under the most unfavourable circumstances we can imagine, we have no chance to lose by it, but a great probability of gaining. Under these circumstances, I recommend their immediate erection. I next call your attention to the present appearance of the mine, and our limited operation. I presume you are all aware that the mine has improved in depth—the bottom of the shaft being the best part. It is, then, our interest to carry down the shaft with vigour; it was also absolutely necessary to drive, and open the tin ground we had already sunk through—so that we might be able to make a return as speedy as possible, knowing that the state of our finances would not admit of both being done at once; and that we might be prepared to supply the stamps, when erected, with tinstuff, I stopped the shaft for the time, which I should much like to be still sinking, if we could meet the expense. It may be asked, why, if we have a certain quantity of tin ground open, we do not take it away? I would answer, if we did, we must employ an additional number of men, with, of course, an additional expenditure, without any immediate benefit, as it is quite impossible to return it without the stamps; and, as there will be no difficulty to supply them, when erected, it is far better to wait until that is done. In conclusion, I beg to say our prospects at the present time are improved; although the mine is not rich. I repeat what I have often stated before, that we have a fair prospect of making Hobb's Hill a lasting and profitable mine."

WHEEL MAUD.—At a meeting of adventurers, held at the mine, on the 29th Oct., the pursuer's accounts were examined and passed, showing—Balance due pursuer last account, 2511. 7s. 7d.; Sept. cost, 9. 13s. 3d.; interest, 12. 18s. 5d.; sundries, 22. 1s. 6d.—= 2554.—By arrears of calls received, 1292. 15s.; leaving balance due pursuer, 1357. 5s. 9d.—It was resolved, that the mine be abandoned, and the materials immediately sold by public auction; and the pursuer is directed to continue legal proceedings against all defaulters.

SOUTH AUSTRALIAN MINING COMPANY.—A special meeting of this company was held at Adelaide, on Wednesday, the 19th May last; when the Deed of Settlement was signed and adopted. Some discussion arose, as to the holders of one or two shares voting, when it was resolved, that the present holders have one vote; but that the scale, in future, be from 3 to 5, one vote; 6 to 10, two; 11 to 15, three; and so on up to 91 to 100, fifteen votes, and one vote for every 25 shares above 100. It was also agreed, that no director should remain in office longer than three years.

ALTEN MINES.—Advices have been received from Alten, extracts from which will be seen in another column. It appears, that the prospects of the Raipais Mine are highly flattering, and the ore contained in the several lodes is rich. At Woodfalls, in the United Mines, a discovery has been made of a good branch of ore. At Ryper's and Macra's, the lodes were looking promising, and the general prospects for the ensuing spring are better than for years past.

PRODUCE OF THE URAL MINES.—The Oesterreichischer Beobachter states, that the produce of the Crown and private mines of the Ural, during the first six months of the present year, was 166 pounds of gold, and 29 of platinum.

WHEAL ANDREW AND NANGLE.—In our Notices to Correspondents, in the Journal of the 30th ult., we alluded to the complaints of an adventurer, in the above mines, respecting the inefficiency of the underground agency. We have this week received another communication, in which he reiterates the charges, and states that he cannot, as we recommended, lay his complaints before a committee of management, as the adventure is managed by Capt. Francis solely, who calls the meetings, which generally consist of only about one-third of the shareholders; and, although he has appeared several times to them, the same course is pursued, which he declares, unless speedily altered, must inevitably stop the undertaking. The majority of the shares are held in London, and if things are really as bad as our correspondent represents them, we would seriously recommend him to communicate with some of the holders, and arrange for a general meeting, not only to take the case into consideration, but for taking measures for grappling immediately with the difficulty, and establishing a better state of things. Surely, if the adventure is managed by Capt. Francis he cannot refuse to call a legal meeting in London, on a requisition to that effect from a number of holders, holding a large interest in the mine.

## ACCIDENTS.

North Fensy Consols.—Mark Smith fell down the shaft here, and was killed. Newquay Consols.—J. Holman was struck on the head by a balance-bob, which was being raised into its place, and killed.

Polygoth.—T. Skewes was killed by a fall of roof.

Wheal Kitty.—While H. Bray was working at the 40 ft. level, and was in the act of driving his barrow to the pit, by some means his candle went out, and he fell about 10 fathoms, and died shortly after.

Zoedon Iron Works.—Two persons were killed, by an accidental explosion of gunpowder, at these works, on Saturday last.

Durham.—M. Hunter was killed by a fall of roof at Lord Londonderry's Nicholson Colliery.

Main Vauor Colliery, Ricca.—Explosion.—A fatal explosion of fire-damp occurred here on Sunday last, by which Thomas Crook lost his life, and his brother Stephen, and two others, dreadfully injured. There was but a small accumulation of gas, and the accident occurred through the recklessness of the men, in carrying their lamps without the gauge shield over them.—John Coleman, aged 10 years, a nephew of the deceased, was killed on Monday by a fall of coal, and five brothers, and two grandsons, have likewise been killed by explosions.

North Elmick Colliery, Durham.—As G. Duckham was sending a tub of lime down the pit, his foot slipped, and, knocking his head violently against a post, he was killed.

Bromley, near Brierley Hill.—As G. Ashman and a companion were employed getting coal at Messrs. Firmstone's, a quantity fell, and buried poor Ashman under its weight.

Hart's Hill, Bromley.—As S. Bedard was getting coal at Messrs. Cochrane's Colliery, a quantity of coal fell and buried him; he died shortly after, from the effects of his injuries.

Bilton.—Fatal Accident to a Woman.—As Eliza Hollingshead was assisting as a bank's girl at the mouth of a pit in the neighbourhood, and was in the act of passing a skip from the platform to the bank, the catch gave way—the platform fell back, and the deceased (who was standing between two men) fell backwards down the pit, which is 84 yards deep, and was killed on the spot. The two men narrowly escaped with their lives, by jumping off the platform to the side of the pit—catching hold of the frame, whilst their legs hung down over them.—John Coleman, aged 10 years, a nephew of the deceased, was killed in a stone pit, in Mr. Banks's field, by about 3 tons of stone and clod falling upon him; he had been warned that the stone was unsafe, but he tried it with his pick, and said it was all safe, which, unfortunately, proved otherwise.—E. Malony died from the effects of injuries received whilst working in a colliery here.—While M. Maloney was working in one of the pits of Messrs. Pemberton's colliery, a clod of earth fell and killed him.

Darlington.—P. McNe was killed by a fall of earth at Mr. Addenbrooke's Colliery.

Rosley Rags.—M. Atwood, aged 19 years, was found dead at the bottom of the shaft of the stone pit of the British Iron Company, at Cradley Heath. It appeared that there was a gin near the bottom of the shaft, from which a large arm projected; and that, when any empty skips are being let down to the deep part of the pit, this gin revolves with considerable speed—and it is supposed that the deceased had incautiously gone too near it, and was struck by the arm.—Birmingham Advertiser.

Wolverhampton.—A collier, named Dandy, whilst working in a pit on the Dudley road, had one of his legs and collar-bone broken—and subsequently died of his injuries.

A Pit on Fire.—A pit at the colliery of Messrs. Iron and Co., Hart's Hill, took fire on Tuesday morning last, in consequence of what is called the "breeding fire" communicating with a quantity of slack and other combustible materials lying about the pit. The flames spread with alarming rapidity—speedily bursting forth at the mouth of the pit, and presenting a fearful appearance. Fortunately, the men were not in the pit at the time—their hour for commencing work not having arrived; no other damage was, therefore, done, than the destruction of a horse, which was suffocated by the sulphur. The raging element was speedily extinguished by the men closing up the mouth of the pit, and preventing the admission of air.—Birmingham Journal.

Brampton Moor.—J. Briggs was sadly injured by a fall of earth, but is now fast recovering.

Cole, near Chesterfield.—J. Cagion, aged 14, in attempting to descend the pit by the rope, missed his catch—was precipitated to the bottom, about 40 yards, and was killed.

Awful Death of a Man at Kellay Iron Works.—A shocking occurrence happened to a young man, named Powell, who was crushed to death by the falling of an immense boiler, weighing about 12 tons, belonging to Messrs. Blackwell, Jones, and Oakes. The deceased was a labourer, employed at the Oak Farm Works; and, on the occasion of the accident, was sent with the boiler in question to superintend its removal.

West Bromwich.—As H. Walton and J. Payne were in a working, about distance from each other, a large portion of the mass of coal they were getting suddenly detached itself, and, falling upon Walton, injured him so severely, that he died soon afterwards.

Comical Invention, near Falmouth.—One night last week, at Lodge Hill, near New Durham, an old pitman, named Marley, was preparing cartridges by candle light for blasting coal, and filling straws with gunpowder for the same purpose. His gunpowder magazine (an old tea-pot) stood beside him. Having filled one of his straws, how did the old man seal it? He shoved one end of it among the groove of his candle, just below the flame! He did this so cleverly, that it caught fire, and exploded his powder magazine! Both he and a little girl were burnt by the explosion. "Burnt children," says the adage, "dread the fire." The little girl will keep out of the way the next time the old gentleman prepares his fireworks; but whether he himself will be wiser for his warning is doubtful.—Gateshead Observer.

## MEETINGS OF PUBLIC COMPANIES DURING THE WEEK.

THIS DAY.—East Coombe Mining Company—Eborby Arms, Barnstaple, at Two. Charing-cross Bridge Company—offices, at One. Tolcarne Mining Company—Tyack's Hotel, Cambridge, at Twelve. TUESDAY.—Kirkcudbrightshire Mining Company—offices. Imperial Brazilian Mining Association—London Tavern, at Two. Equitable Gas-Light Company—offices, at One. Killarney Junction Railway—offices, Dublin, at Twelve. WEDNESDAY.—Wheal Anderton Mining Company—offices, at One. Rhymney Iron Company—offices, at One. Medical, Legal, and General Mutual Life Assurance Co.—offices, at One. THURSDAY.—Northern Coal Mining Company—Norfolk Hotel, Norwich, at Twelve. FRIDAY.—Compressed Air-Engine Co.—Thatched-house Tavern, St. James's, One. Metropolitan Joint-Stock Conveyance Co.—Pine Apple Tavern, at Seven.

## VALUE OF LAND, &amp;c.

The following results of some extensive sales, by auction, by Messrs. Fare-brother, Clark, and Lye, will convey an idea of the present value of land, and some other kinds of property:—

The Miskin estate, near to Cardiff, in Glamorganshire, consisting of several farms, lands, and extensive mineral properties—the whole about 5000 acres, in lots, 181,270.

A freehold estate, near to Bakewell, in Derbyshire, comprising 685 acres of land, divided into farms, with extensive fishery—the land let at 1927. per annum, 38,800.

The freehold Coombe End estate, on the Cotteswold Hills, near to Cheltenham and Gloucester, consisting of a superior farm residence and buildings, and 87½ acres of land—let at 739. per annum, 24,100.

Several policies of assurance in different life offices for 35,000l., on the life of a nobleman, aged 75, subject to premiums amounting to 1340. per annum—sold for 21,640.

The Broadfield Colliery, extending over about 180 acres, situate at Stoke-upon-Trent, Staffordshire, together with the valuable machinery for working the same, 17,400.

A residence, No. 25, Tavistock-square, held for 76 years, at a ground-rent of 22. per annum, 1590.

A valuable church prebend, near to Ely, Cambridgeshire, being the next presentation to the rectory of Covenham-Manea (subject to the life of the incumbent, aged 75 years), consisting of a parsonage-house, &c., 44 acres of glebe land—the tithes of the parishes commuted into a rent-charge of 1071. 12s. 8d.—per annum, 5000.

The estate and manor of Fifehead Nevills, situate in the rich vale of Blackmore, Dorsetshire, comprising nearly the whole of the parish, together with extensive and valuable rights, 36,800.

IMPERIAL AND CONTINENTAL GAS COMPANY.—A general meeting of proprietors of shares in this undertaking was held, yesterday, at the offices of the company, White Hart-court, Lombard-street. The minutes of the last general meeting having been read and confirmed, Mr. William Walton, the secretary, read the report of the board of directors, and the statement of accounts. The report congratulated the shareholders upon the continued prosperity of the company, and recommended a dividend of 5 per cent. on the paid-up capital of the company, for the half-year ending the 30th of June. The half-yearly report on the second capital was subsequently read, and a similar dividend declared. After the transaction of some routine business, thanks were voted to the chairman, and the proceedings terminated.

OAKEN AND CHURCHWAY COLLIERY, FOREST OF DEAN.—In the Bankruptcy Court, on Saturday last, Mr. J. Matthews, who was the proprietor of this colliery, applied for a final order. He owes 10,578. 7s. 10d., and amongst the debtors to the estates, amounting to 6619. John Brown, Esq., personal representative of the late Viscount Montagu, appears for 4810.; executors of the late Earl of Strathmore, 1800.; and Sir W. Amaring Hargate, Bart., 5000. The colliery was valued at about 40,000.—Mr. Cooke (for the creditors), prayed that the case should be adjourned for six months, in order to see what would be realised from the mine, which was of great value.—M. Duncan would make no objection; but had to apply that the insolvent should have the management of the mine or colliery, he being a scientific man, and without his aid there was no doubt that it would not realise what it ought. By that means he would pay 20s. in the 17, and leave a large surplus for himself. After some discussion the case was adjourned for four months—inquiry to be made in the meantime.

IRISH RAILWAYS.—We regret to hear, that, owing to the want of money, notice has been given to the labourers on the Waterford and Limerick Railway, that, in future, wages can only be paid to them at intervals of eight weeks. This arrangement will inflict many hardships, and give rise to excessive suffering generally.

RAILWAY RATES.—The average contribution by the English railways to the local and parish rates every year, amounts to 5 per cent. of their earnings, estimated at nearly 8,000,000. a year; in round numbers 400,000. towards the 6,000,000. annually raised for the poor—that is, 1-15th of the total rates and 50 times what the same quantity of land contributed before its conversion to railways. The burden of feeding the poor during the approaching winter will be shared by the railways who have discontinued reproductive employment, by the cessation of cuttings and embankments. One of the Irish railways has paid 9000. more in rates than in any preceding year.—Nash's Railway and Land Taxation.

THE BELGIAN RAILWAYS.—From the report of the receipts of railways in the month of September, it appeared, that they amounted to 1,636,124 fr.—being 96,000 fr. more than in the month of September last year. The increase amounts to 27,000 fr. for passengers, and 55,000 fr. on goods. A slight diminution has taken place on the transport of goods, which is easily accounted for by the fact, that the foreign travellers, who mostly pay for their goods, reached the culminating point in August. From 1845 to 1846, there was an increase of 791,407 fr., or 8½ per cent. The increase of 1847 has exceeded that of the present year by 912,644 fr., or 5 per cent.—while the budget has calculated upon an increase of only 14 per cent.; the end of the year will show a surplus of more than a million.

The electric telegraph between Montreal and New York, a distance of 1021 miles, is now open.

MANMOTH MACHINERY.—We noticed the transit through the town of an immense wrought-iron shaft, manufactured by Messrs. Peel, Williams, and Peel, of the Soho Iron Works, and destined to be used in the construction of the Wapping tunnel, at the Liverpool terminus of the Liverpool and Manchester section of the London and North-Western Railway. This immense mass of wrought-iron, upwards of 10 tons in weight, is, we believe, the longest ever constructed, being 31 ft. long, and 15 in. diam. in centre, and 17 in. at ends. There was also a large three-sheave pulley of 16 ft. diam., and weighing upwards of 10 tons, intended for the same destination.—Manchester Courier.

## NEW PATENTS.

J. Robertson, gent., Treadmouth, Berwick, for improvements of architecture, the elementary method of formation employed in the same; also further applicable for harmonising formation, as of urns or vases.

H. Fielder, Carlton-villas, Maida-vale, Middlesex, for improvements in the construction of iron beams or girders.

E. Wand, Bradford, Yorkshire, spinner, for improvements in the construction of machinery for preparing and spinning alpaca, mohair, wool, flax, and other fibrous materials.

G. Heaton, Birmingham, engineer, for improvements in locomotive engines.

Henry Kroh Claypole, gent., Liverpool, for certain improvements in the process, apparatus, and machinery for making sugar. (Being a communication.)

J. Jean Baranowski, gent., 3, Rue Neuve Cléry, Paris, for a ready-reckoning machine.

I. Kinsman, late of New York, but now of Ludgate-hill, London, for improvements in the construction of rotary engines, to be worked by steam, air, or other elastic fluids.

F. Collier Bakewell, gent., Hampstead, Middlesex, for certain improvements in machinery, or apparatus, for making or manufacturing soda-water, and other aerated waters.

S. Salmen, Hounslow, Middlesex, manufacturer, for improvements in rendering certain materials applicable as a substitute for leather, paper, papier maché, and oil-cloth, in various articles of manufacture. (Being a communication.)

G. J. Soward, gent., Huntley-street, Bedford-square, for improvements in suspending windows, shutters, and blinds, and in the construction of the frames for the same. (Being a communication.)

C. Blackford Mansfield, Esq., of Clare-hall, in the University of Cambridge, for an improvement in the manufacture and purification of spirituous substances, and also applicable to the purposes of artificial light and various useful arts, and in the application thereof to such purposes, and in the construction of lamps and burners applicable to the combustion of such substances.

G. H. Bursill, Hornsey-road, Middlesex, and J. Radford, Maida-hill, for improvements in envelopes, wrappers, and covers, and in machinery and apparatus for the manufacture thereof.—Mechanics Magazine.

## COAL MARKET, LONDON.

PRICE OF COALS PER TON AT THE CLOSE OF THE MARKET.

MONDAY.—Buddle's West Hartley 19 6—Clavering's Tanfield 16 6—Hastings's Hartley 19 6—Holywell Main 18 6—North Percy Hartley 19 6—Ord's Redhouse 16 3—South Pearethe 16 6—Tanfield Moor 18 6—West Wylam 16 9—Wall's End Acres Close 19 6—Bevick and Co. 19 6—Elm Park 19 6—Heaton 19 6—Wharfedale 16 6—Eden Main 19 6—Braddyl's Hutton 20 3—Hutton 20 9—Keopler 20 6—Lambton 20 6—Whitwell 19 6—Adelaide Tees 20 3—Cowdron Tees 19 6—Seymour Tees 20 6—Tees 20 6—Blangwarr 23.—Ships at market, 55; sold.

WEDNESDAY.—Adair's Main 16 6—Buddle's West Hartley 19 6—Clavering's Tanfield 16 6—Hastings's Hartley 19 6—Holywell Main 18 6—South Pearethe 16 3—Tanfield Moor 18 6—West Wylam 16 9—Wall's End Acres Close 19 6—Bevick and Co. 19 6—Elm Park 19 6—Heaton 19 6—Wharfedale 16 6—Eden Main 19 6—Braddyl's Hutton 20 3—Hutton 20 9—Keopler 20 6—Lambton 20 6—Whitwell 19 6—Adelaide Tees 20 3—Cowdron Tees 19 6—Seymour Tees 20 6—Tees 20 6—Blangwarr 23.—Ships at market, 55; sold.

FRIDAY.—Bate's West Hartley 19 6—Holywell Main 18 6—North Percy Hartley 19 6—Ord's Redhouse 16 3—South Pearethe 16 6—Tanfield Moor 18 6—West Wylam 16 9—Wall's End Acres Close 19 6—Bevick and Co. 19 6—Elm Park 19 6—Heaton 19 6—Wharfedale 16 6—Eden Main 19 6—Braddyl's Hutton 20 3—Hutton 20 9—Keopler 20 6—Lambton 20 6—Whitwell 19 6—Adelaide Tees 20 3—Cowdron Tees 19 6—Seymour Tees 20 6—Tees 20 6—Blangwarr 23.—Ships at market, 55; sold.



### LATEST CURRENT PRICES OF METALS

LONDON, NOVEMBER 12, 1847.

	£	s	d.		£	s	d.
Brown-Bar a. Wales...	10	8	12	Copper—Ord. bottoms...	0	0	12
„ „ London...	0	0	12	YELLOW-METAL SHEATHING...	0	0	0
Nail rods...	0	0	10	TIN—Comm. blocks...	0	0	4
Hoop (Stal.)...	0	0	11	„ „ bars...	0	0	4
Sheet...	0	0	13	Refined...	0	0	4
Bars...	11	0	11	Strains...	4	0	4
Welsh cold-blast...	4	10	5	Bracon...	0	0	4
foundry pig...	3	10	2	TIN-PLATE—Ch. IX, box 1...	1	0	10
Scotch pig 6, Clyde...	3	10	2	„ „ IX...	1	14	16
Rails, average...	8	0	8	Coke, IX...	1	3	4
Chairs...	0	0	10	„ „ IX...	1	5	10
Russian, CCND...	0	0	0	LEAD—Sheet...	0	15	0
„ FSI...	0	0	0	Pig, refined...	0	20	5
„ Gourieff...	0	0	0	„ common...	18	0	10
„ Archangel...	0	0	13	„ Spanish, in bd.	0	0	17
Swedish on the spot...	0	0	11	Red...	0	0	10
„ Steel, fugt.	0	0	16	Dry White...	0	0	24
„ „ Regue...	14	10	15	Shot (Patent)...	0	0	21
Copper—Tie/...	0	0	20	SPELLER—(Coke) on spot...	0	17	0
Tough cake...	0	0	28	ZINC—(Sheet) in export...	0	27	0
Best selected...	0	0	10	QUICKSILVER...	0	0	4
Ordin. sheets, 70...	0	0	0				

a Discount 23 per cent. b Net cash. c Discount 24 per cent. d Ditto  
e In kegs 1 and 4-inch. f Discount 35 per cent. g Ditto 24 per cent. h Net cash  
in bond. i Discount 3 per cent. k Ditto 23 per cent. l Net cash.  
m Discount 14 per cent. n Discount 14 per cent. \* For home use it is 32s. per ton.

[FROM OUR CORRESPONDENT.]  
This has been, even in these times, an unusually dull week in metals, the small demand which exists, being entirely confined to transactions for home use. Prices are, nevertheless, fairly maintained; and, with the exception of Scotch pig-iron, which is lower, the remain as quoted in last week's Mining Journal.

GLASGOW PIG-IRON TRADE, Nov. 11.—Our pig-iron market is in a very depressed state, and, since the date of our last, prices have further given way. For cash down, 50s. has been taken for mixed No. 1; for cash in 14 days, the price may be quoted at 50s. for No. 3; 51s. for mixed No. 2, and 52s. for No. 1—free on board. Some of the makers are about to reduce their make, which may have the effect of checking the fall for the present.

EXPORTS OF METALS TO ALL INDIA FROM LONDON AND LIVERPOOL, FOR THE FIRST TEN MONTHS OF 1846 AND 1847.

	1846.	1847.	In. in 1847.	Dec. in 1847.
Spelter .....	Tons 2717	4502	—	1786
Copper .....	2946	2907	—	51
Iron, British .....	5921	7246	2675	—
Ditto, foreign .....	766	3013	—	2249
Tin-plates .....	Boxes 7043	6023	1020	—
Lead .....	Tons 846	374	472	—
Steel .....	841	723	—	182
Quicksilver .....	Bottles 80	753	—	708

CURRENT PRICE OF GOLD AND SILVER.  
Foreign gold, in bars ..... per oz. £3 17 9 | New dollars ..... per oz. £0 4 9 1/2  
„ Portugal pieces ..... 0 0 0 | Silver in bars (standard) ..... 0 4 11 1/2

LEAD ORES.  
Sold at Holmely, November 4, 1847.

Mines.	Tons.	Amount.	Purchasers.
Machynlleth .....	40	£9 13 0	Mather & Co.
Sold at Liskeard, Nov. 5, 1847.			
Trelawney .....	73	£15 3 6	Tamar Company.
Trehane .....	56	16 7 6	ditto
Sold on the Mine.			
East Wheal Rose .....	50	£12 8 0	Michell & Son.
ditto .....	50	12 8 0	Tamar Company.
Sold at Holmely, Nov. 11, 1847.			
Talargoch .....	69	£9 6 0	Mather & Co.
ditto .....	31	9 13 0	ditto
ditto .....	10	10 0 0	Newton, Keates, & Co.
Milw .....	3	10 0 0	ditto
ditto .....	3	10 0 0	ditto
Hendre .....	43	9 15 0	Walker, Parker, & Co.
ditto .....	51	9 10 0	Newton, Keates, & Co.
Deep Level .....	90	9 12 6	Walker, Parker, & Co.
Fronfawgon .....	115	9 16 6	ditto
ditto .....	30	10 15 9	Mather & Co.
Jamaica .....	50	9 5 0	ditto
Cwmystwith .....	21	8 15 6	Newton, Keates, & Co.
Rhoswydol .....	33	9 0 0	ditto
Dyffrynwm .....	22	9 6 0	Mather & Co.
Bryntall .....	44	8 12 0	Walker, Parker, & Co.
ditto .....	5	6 0 0	Newton, Keates, & Co.
Llangynog .....	21	8 11 0	Walker, Parker, & Co.

BLACK TIN.  
Mines. Tons. Price per ton. Purchasers.  
Great Fulgooth ..... 23 | £46 10 0 | Calenick Co. and Williams. || ditto ..... | 13 | 44 0 0 | ditto |

COPPER ORES.  
Sampled Oct. 27, and Sold at Andrew's Hotel, Redruth, Nov. 11, 1847.

Mines.	Tons.	Price.	Mines.	Tons.	Price.
Carn Brea .....	106	£4 6 6	United Hills .....	12	£3 19 0
ditto .....	93	5 16 6	Wh. Sparrow .....	55	3 2 0
ditto .....	85	5 7 0	ditto .....	18	4 13 0
ditto .....	76	10 18 0	Levant .....	50	4 12 0
ditto .....	73	8 1 0	ditto .....	40	7 16 0
ditto .....	72	4 16 0	ditto .....	9	36 1 0
ditto .....	68	3 13 6	Wh. Bucketts .....	43	3 6 0
ditto .....	63	5 3 6	ditto .....	41	3 18 0
ditto .....	56	4 0 0	ditto .....	33	4 15 0
Par Consols .....	79	8 10 6	West Wh. Treasury .....	45	5 3 0
ditto .....	76	8 19 6	Wh. Agor .....	3	
ditto .....	72	8 7 6	Wh. Virgin .....	39	6 13 0
ditto .....	67	11 5 6	ditto .....	37	4 2 0
Alfred Consols .....	62	3 16 0	Wh. Agar .....	72	4 13 0
ditto .....	56	3 8 0	Botallack .....	36	6 10 0
ditto .....	52	7 3 6	ditto .....	23	26 3 0
Cwmystwith .....	46	2 0 6	North Wh. Basset .....	30	4 13 0
ditto .....	46	2 0 6	ditto .....	29	11 10 0
Wh. Prosper .....	68	4 6 6	St. Ives Consols .....	23	7 2 0
ditto .....	65	4 11 6	Wh. Tremayne .....	20	7 16 0
ditto .....	58	3 6 6	Wh. Ayr .....	20	5 4 0
ditto .....	32	1 7 0	Spearhead Moor .....	12	9 0 0
Wh. Friendship .....	10	3 18 0	Todd's Regulus .....	10	11 0 0
United Hills .....	63	4 14 6	N. Wh. Abraham .....	6	2 8 0
ditto .....	45	3 2 6	Wh. Venture .....	5	37 10 0

TOTAL PRODUCE.  
Carn Brea ..... 815 | £4992 4 6 | Wh. Agar ..... | 72 | £334 16 0 || Par Consols ..... | 294 | 2679 16 0 | Botallack ..... | 59 | 287 4 0 || Alfred Consols ..... | 266 | 993 10 0 | North Wh. Basset ..... | 37 | 409 16 0 || Wh. Prosper ..... | 233 | 866 10 6 | St. Ives Consols ..... | 23 | 163 6 0 || Wh. Friendship ..... | 10 | 36 0 0 | Wh. Tremayne ..... | 20 | 156 0 0 || United Hills ..... | 185 | 703 0 0 | Wh. Ayr ..... | 20 | 104 0 0 || Wh. Sparrow ..... | 174 | 1275 1 6 | Spearhead Moor ..... | 12 | 108 6 0 || Wh. Bucketts ..... | 117 | 459 7 6 | Todd's Regulus ..... | 10 | 110 5 0 || W. Wh. Treasury ..... | 91 | 500 3 0 | N. W. Abraham ..... | 6 | 14 8 0 || Wh. Virgin ..... | 73 | 382 16 0 | Wh. Venture ..... | 5 | 37 10 0 |
Average Standard.....£ 95 14 0	Average Produce.....£ 25 15 0						8 1/2
Average Price per ton.....£ 25 15 0						8 1/2	
Quantity of Ore ..... 2532 tons.	Quantity of Fine Copper, 225 tons 1 cwt.						8 1/2
Amount of Money .....£14,578 9 6						8 1/2	
LAST SALE.....£ 98 7 0.—Average Produce.....£ 25 15 0						8 1/2	

COMPANIES BY WHOM THE ORES WERE PURCHASED.

	Tons.	Amount.
Mines Royal .....	336	£1239 13 0
English Copper Company .....	266	1312 18 0
Vivian and Sons .....	417	3017 13 6
Freeman and Co. .....	474	2487 18 8
P. Grenfell and Sons .....	22	1073 9 0
Crown Copper Company .....	2	251 16 2
Sims, Williams, and Co. .....	240	1972 2 9
Williams, Foster, and Co. .....	543	3612 17 5
Total tons.....	2532	£14,578 9 6



## TIN VALE MINING COMPANY, ST. NEOT, COUNTY CORNWALL.

1000 parts, or shares, of £2 per part, or share.  
NOW AT WORK ON THE "COST-BOOK" PRINCIPLE.

CHAIRMAN.  
ROBERT OWEN ALAND, Esq., Gerrard-street, Soho-square.

## DIRECTORS.

JOHN POSFORD OSBORNE, Esq., Ardleigh Park, Colchester.  
JOSEPH CARRINGTON RIDGWAY, Esq., Roehampton Lodge, Roehampton.  
BENJAMIN FORRESTER SCOTT, Esq., Northampton Park, Ball's Pond.  
BARTHOLOMEW DAVES, Esq., Soho-square.  
WILLIAM W. MANSELL, Esq., Purser, Dorchester-place, Blandford-square.

CAPTAIN OF THE MINE—Mr. John Floyd, Harrowbridge.

Solicitor—John Butler, Esq., 134, Tooley-street, Southwark.

BANKERS—Messrs. Ransom and Co., London.

OFFICES—No. 4, SALISBURY-STREET, STRAND, LONDON.

## PROSPECTUS.

This mine sits at Harrowbridge, in the parish of St. Neot, in the county of Cornwall, on the banks of the Drina River, and extends over about 200 acres of mineral land. It is held on lease for 31 years, from the lords of the manor, at a royalty, or due, of 1-15th, and totally free from sleeping or dead rent.

Five tin lodes, underlying south, have already been opened. A shaft has been sunk about 10 fathoms, and two adits driven—one about 80 and another 20 fathoms. The first lode in the cliff adit, marked A on the map, has already been opened 10 fathoms to the east, and about 20 fathoms to the west, the course of the lode, from which ore is procured, and a considerable quantity is now on the bank, ready for stamping.

The second adit, marked B on the map, has been driven 20 fathoms on the course of a lode, of most promising appearance.

Five pairs of stamps are in course of construction, as well as all necessary machinery for carrying on the works efficiently; and Captain Floyd asserts that returns will be made before Christmas.

The ore is of the best description, being free from compound.  
The tin streams are considerable: they have been secured also for the company, at a royalty, or due, of 1-15th, and arrangements have been made for working them on tribute.  
The freehold of land sufficient for the erection of workmen's cottages has likewise been obtained, and the quantity of granite which abounds in the locality renders building cheap.

The operations of the company are carried on under the "Cost-book" Principle, which exempts the company from the provisions of the Act for the Registration of Joint-Stock Companies (3 and 6 Vic., cap. 110), the 63rd section of which enacts—  
"Provided always, and it is enacted, that nothing in this Act contained shall extend, or be construed to extend, to any partnership formed for the working of mines, minerals, and quarries, of what nature soever, on the principle commonly called the Cost-book Principle."

Under the "Cost-book" Principle, shareholders have the right of determining their responsibility, by giving notice of their intention to relinquish their shares, and on forfeiture of all previous payments. The 15th clause states—  
"That any shareholder, or shareholder, may determine his or her responsibility or liability to the affairs of this mine, upon his or her giving notice, in writing, to the purser of the company for the time being, of his or her desire of retiring from the company; and also, upon depositing with the said purser the share or shares held by him or her, and signing a relinquishment of all claims or demands on the company in respect to such share or shares."

The present losses, in consideration of the transfer of the lease to the company, to be paid the sum of £2000 shall have been paid to them.  
Applications for shares to be made at the offices of the company, 4, Salisbury-street, Strand; John Butler, Esq., solicitor to the company, 134, Tooley-street, Southwark; J. Lane, Esq., mining shareholder, 75, Old Broad-street, City; and Messrs. Oliver and Co., stock and share brokers, Coggeshall, Essex—where prospectuses and every information may be obtained.—Prospectuses can also be had at the office of the Mining Journal, 26, Fleet-street, London.

REPORT OF CAPTAIN W. H. WHITFORD, APRIL 27, 1847.

The above mine is situated in the parish of St. Neot, contiguous to the celebrated Drina River, on the well-known estate of Harrowbridge, embracing a spacious and extensive valley, bounded on the west by high hills, of a pleasing and graceful declivity. The bottom, or valley, has been strewn for tin during the lapse of ages, and yet its stores are unexhausted. During the last week, a shaft was sunk down to the level of 8 fms. below the surface, and obtained the high price of £57 10s. per ton. Several promising lodes have been intersected by these streamers, of a very beautiful and rich appearance, which they were inadequate to pursue to any considerable extent. An adit has been driven about 70 fms. through a granite stratum which is perfectly congenial for tin—several rich branches having been cut in this cross-cut, which will come in contact with the lode in driving west, at which point (reasoning from analogy) we expect a fine course of tin. Below the lode about 40 fms. beyond the cross-cut, it was sunk on to the depth of 8 or 9 fms. where it was 4 feet wide, richly spotted with tin; but an influx of water prevented the parties from sinking deeper. The very promising character of this lode was the principal inducement to commence the adit; and it is highly probable that more lodes may be cut in driving this adit, as it is a new and unbroken piece of ground. A quantity of tin has been raised from the branches referred to in the adit, which is still to be seen in the mine. There are several collateral advantages in connection with this speculation, which ought not to be omitted, and which are of vast importance to the interest of this mine. The first is, that the lode is very rich, and the second is, that the abundance of water, sufficient for any kind of machinery. From the whole, I believe it to be a first-rate speculation.

REPORT OF CAPTAIN JOHN FLOYD, SEPTEMBER 2, 1847.

The first adit level is driven south 90 fms., and intersected the north tin lode in the east and west ends; it is 5 ft. wide, producing good tin; the remainder of the lode (exclusive of the tin) is quartz, mica, and black pelts, which composition is the forerunner of abundance of tin; the said ore will now pay for working—I mean, pay its own cost; the ground by the side of the lode is soft granite, and can be driven or worked for the low price of 50s. to 60s. per fm., and very little good tin will pay the expenses, but in the said lode there is a great portion of good tin. From the north lode the adit level is continued on south 8 fms., and cut the middle tin lode, which is 3 ft. 6 in. wide, and, in a word, exactly the same properties as the north lode. From the middle lode, 15 fathoms further south, there is the south tin lode, which is 4 ft. wide, and a shaft is sunk down to the level of 8 fms. below the surface, producing very large quantities of tin; the said tin that was taken up from the lode in the shaft is now to be seen on the surface; we have to sink on the course of this lode 34 fms., to have a communication with the adit level that will make the mine between 40 and 50 fms. deep at the adit level—so you can see what high tin ground there will be to work on; and it is my opinion, we shall make large returns of good tin from the great south tin lode above the adit level, exclusive of the north lode. We have also driven another shaft, which is 30 fms. deep, on the course of a recently discovered tin lode in the central part of the east—the lode is most promising; it is 3 ft. 6 in. wide, making two regular wells, composed of blue capels, mica, quartz, and tin. It is my real opinion that when we have driven 40 fms. further to hill, we shall intersect the great camter lode, where we shall have abundance of tin; the strata on each side of the lode is a beautiful granite—good standing ground. We are paying £2 10s. per adit for driving. The tin raised in this district is superior to any other part of the county, and realises the best price. There are many other lodes of tin, which is very extensive, and there is sufficient water-power for machinery, which will effect a great saving, for no steam-power will be wanted. The roads are good, and the mine is not far from the smelting-house.

## RULES AND REGULATIONS.

1. That the name of the company shall be the "TIN VALE MINING COMPANY."
2. That the capital of the company shall be divided into 1000 parts, or shares, and that no adventurer, or shareholder, shall subdivide any part, or share, less than 1000th part, or share.
3. That an immediate call of £2 per part, or share, be made.
4. That no other call be made without the consent of the shareholders, at a public meeting, convened for the purpose.
5. That if any adventurer, or shareholder, small omit or refuse to pay the present, or any future, call for the space of one month, after the same shall have been made, and due notice thereof given to such adventurer, or shareholder, then the share or shares of such adventurer, or shareholder, shall be forfeited, and become the property of the remaining adventurers, or shareholders.
6. That a board of directors be appointed, to consist of not less than five adventurers, or shareholders, and that each member of such board shall, at the time of his election, and during his continuance in office, hold, and continue to hold, 25 shares in the company, at the least; and that Robert Owen Aland, Esq., of Gerrard-street, Soho-square, in the county of Middlesex; John Posford Osborne, Esq., of Ardleigh Park, near Colchester, in the county of Essex; Joseph Carrington Ridgway, Esq., of Roehampton Lodge, Roehampton, in the county of Surrey; Benjamin Forrester Scott, Esq., of Northampton Park, Ball's Pond, in the county of Middlesex; Bartholomew Daves, Esq., of Soho-square, in the county of Middlesex; and William Washington Mansell, Esq., of Dorchester-place, Blandford-square, in the county of Middlesex—shall be the first and present board of directors, with power to add to their number.
7. That the board of directors shall have power to appoint, dismiss, and reappoint all officers and servants, and to do all acts necessary for the furtherance of the objects of the company.
8. That W. W. Mansell, Esq., shall be the purser of the company.
9. That a general meeting of the adventurers, or shareholders, of this mine shall be held at the offices of the company, on the first Monday in January, in every year, and shall be convened by the purser, in the manner hereinafter directed with respect to special general meetings.
10. That the purser for the time being shall be at liberty to call a special general meeting of the adventurers, or shareholders, of this mine, as and when he shall consider advisable or proper.
11. That such general and special meetings shall be convened by written notices, to be sent to each adventurer, or shareholder, 14 clear days before the day fixed for such meeting; and such notices shall be deemed as sufficiently served, if sent by post to the address of each adventurer, or shareholder, as entered in the cost-book.
12. That every adventurer, or shareholder, shall be entitled to a vote at all the meetings of the company for every share held by him or her.
13. That every adventurer, or shareholder, who may be prevented attending at any meeting of the company as aforesaid, shall be at liberty to appoint any other adventurer, or shareholder, to vote and act for him or her by proxy—but every such proxy shall be in writing, and shall continue in force only for the particular meeting for which the same shall have been given.
14. That no adventurer, or shareholder, shall sell or dispose of his or her share or shares in this mine without giving notice, in writing, to the purser—such notice to be given, or left, at the offices of the company, and to contain the name and address, in full, of the party to whom such share or shares is or are proposed to be sold.
15. That any adventurer, or shareholder, may determine his or her responsibility or liability with respect to the affairs of this mine, upon his or her giving notice, in writing, to the purser of the company for the time being, of his or her desire of retiring from the company; and also upon depositing with the said purser the share or shares held by him or her, and signing a relinquishment of all claims or demands on the company in respect of such share or shares.
16. That all questions brought forward for discussion at all meetings of the adventurers, or shareholders, shall be decided by the majority of votes; and, in case of an equality of votes, the chairman of the meeting shall have a vote and a casting vote.
17. That the general accounts of the company for the current expenses of the mine shall be made up and entered in the cost-book on or before the last day in each month.
18. That a duplicate of the cost-book shall be kept by the purser at the mine, and that the cost-book, and the duplicate thereof, shall be at all times open to the inspection and examination of the adventurers, or shareholders, of the company.

## NOTICES TO CORRESPONDENTS.

It will at all times be much trouble, and frequently considerable delay, if communications are simply directed—  
To the Editor,  
Mining Journal Office,  
36, FLEET-STREET, LONDON.

Also, to avoid trouble, Post-Office Orders should always be made payable to WILLIAM SALMON MARSHALL, as acting for the proprietors.

"M. D." (Newcastle).—We feel obliged to our correspondent for his diagram of a double action pump; but it is no novelty, being on precisely the same principle as one we mentioned in last week's Journal, by "J. D. T." and various others formerly described.

DOUBLE-ACTION PUMP.—In Mr. Knorr's letter (Journal of the 23d October), for "care should be taken to have the water-way in the bucket as large as it would admit of, as a double quantity of water has to pass through it in its ascent," should be "in its descent," as the valves must be closed in the bucket's ascent, otherwise it could draw no water one way.

We return our best thanks to our esteemed correspondent for forwarding a volume of the *Encyclopædia Londinensis*, containing an article on the Mines of Angles. Having, however, published a more detailed account in the *Mining Journal* of May 30, 1846, there is no necessity for repetition. We have forwarded a copy of the Journal of that date.

"N. E." (Walsford, Tamworth).—We quite agree with our correspondent, and endeavour to append the locality to the first notice of all new adventures, as a guide to our readers. Should "N. E." be in possession of any particulars, we should feel obliged if he would favour us with them for publication.

WHEEL ANNA MARIA.—The communication of "Nika" must be authenticated; we shall, however, be happy to publish the report of Captain P. Raby, if a copy be furnished us.

"P. B."—Mr. Charles Wyo Williams, some years since, took out a patent for a process of manufacturing and compressing past: a full description of which, with many other interesting particulars, will be found in Sir E. Kane's *Industrial Resources of Ireland*.

"J. D. T."—In our description of his double action pump, in last week's Journal, we should have said—"Two barrels for the current of water to pass at both the up and down stroke of the piston, with one working barrel placed between them."

MINES OF IRELAND.—In the absence of communications, with reference to the Ballygahan, Croaghane, and Tigrone mines, we reserve, until next week, our observations on that district; and, in the meanwhile, have to direct attention to two letters, from correspondents, which merit attention, and which will receive the notice they deserve.

THE MINING JOURNAL is published at about Eleven o'clock on Saturday morning, at the office, 26, Fleet-street, and can be obtained, before Twelve, of all news agents, at the Royal Exchange, and other parts of London.

THE MINING JOURNAL.  
Railway and Commercial Gazette.

LONDON, NOVEMBER 13, 1847.

We are beholden to the *Cornwall Gazette*, of last week, for two things—namely: for a perfectly civil, and a perfectly inconclusive, reply to a few remarks in this Journal of the 30th ult. We have this moment indicated our opinion of the *Gazette's* reasoning—we have a worse opinion still of its arithmetic. Without inviting our contemporary back to the recollection of his school days, may we be permitted to inquire, what is the middle term of 300 and 300,000? His own answer will be the refutation of his statement; for it will then be seen, that any loss to the mines of Cornwall by the tariff regulations of 1842, less than 150,000l. per year, will be perfectly consistent with, and a literal verification in, all the units of the sum of the statement with which the *Gazette* is fighting. Our short article, of this day three weeks, is transferred to the columns of the *Gazette* with perfect fairness. Without the dropping out, or the interpolation of, a single word; the text of our observations is, therefore, present, in proof of the error of their's. Our words, in substance, were—that the loss to Cornwall by the changes in question, was nearer the small sum mentioned by us than the great one affirmed by the *Gazette*. If we thought that any such haberdasher's item as that selected, or one of 10 times its value, was nearly sufficient to cover the Cornish loss, we should have said, considering the magnitude of the aggregate returns practically, that the tariff of 1842 had conceded to the mines of Cornwall the benefits of the *status quo*. Without fixing ourselves to a few hundreds, or a few thousands, on a subject so large, we meant to affirm, that the statement of the *Gazette* was a great exaggeration; and, since then, to prove that it was not so, the *Gazette* has suddenly covered itself with a cloud of figures, by which the truth may be as effectually obscured as disclosed. It takes up the case of the Powey Consols—this mine is a great gun with the Protectionists—its depths are a plenum into which they dive day by day for arguments against the true doctrines of trade. The produce and the profits of that mine fell off, it appears, considerably upon the remission of the tariff; but Sir C. LEMON, the best authority on the subject in Cornwall, says—there is no necessary connection between the tariff and the reduced produce of the mines—that, though the events followed in chronological succession, they cannot be placed in the relation of cause and effect, any more than Tenterden steeple and the Godwin Sands.

In point of fact, a new rival had been many years waxing to maturity, and had now come into all the markets of Europe against us. He walked up to the gates of the protected kingdoms, seeking admission. We shut our portculis down, and, arming our walls, endeavoured to make the ditch impassable. Other mercantile communities were less exclusive: they yielded to a reasonable and patient solicitation; and the ores of Cuba and Chili took the place of British copper ores in the general market of Europe. The suffering, therefore, subsequently to 1842, arose out of the non-relaxation of our tariff at an earlier period—not that we, in some measure, softened its stringency then. The elements of our loss were thus laid anterior to 1842—it was at that time that their force and potentiality first presented itself. But the tariff meddled with more things than the metals and their ores. It lowered the duty on timber, tallow, and hemp—all articles of first-rate consideration in mining works; and it permitted foreign ores to come in for smelting and reduction. Let a just account be taken of the gains arising out of these concessions of the much-abused tariff; and it will be seen, that the mountain which loomed so large in the distance, and which, seen through certain optics, seemed filled with chariots and horsemen, is one of the smallest of the Alps, and full of smooth paths, and green and fruitful inclosures; or, to speak less figuratively, the damages laid in this case by the Truro plaintiff, are unaccountably and extravagantly in excess. However largely we differ in the intermediate reasonings, we are happy to know that the *Gazette* concurs with the *Mining Journal* in its conclusions; if in its conclusions, in their corollaries, also—first, that, as the individuals having the present incumbency of the Cabinet chairs are the political rivals of those who wrought so much mischief in Cornwall, it is but reasonable that Cornish journalists should be less bitter against the least offending party of the two; and, second, that the mining interest—of which the *Gazette* claims to be the advocate—suffers a disservice, when it is represented as a deeply suffering and a nearly ruined pursuit; and not affording, as, in the large majority of cases, it is doing at this moment, to those who adventure in it, a full and liberal remuneration.

We trust we may now deliberately and advisedly say, that there is a clear improvement in the trading and commercial pulse of the kingdom. The patient that was sick—and so seriously sick—is at length decidedly convalescent. Money is manifestly easier, both in town and country. Consols, which were a fraction below 80, are now a fraction above 84; this steady rise of 4 per cent., in less than a fortnight, is much better than that fast and feverish elevation, which is as likely, as in anything else, to terminate in a fall. The precious metals also are finding their way, in fair quantities, back into the Bank of England, from which they had been long flowing out, in payment of our vast importations of corn, flour, and other descriptions of food. The assumed maximum discount of 9 per cent. is scarcely anywhere paid—the necessary accommodation being currently afforded at 4 or 5 per cent. Firms, also, which, in the crisis of the pressure, and under circumstances, as it now appears, of unnecessary alarm, were driven to the suspension of their payments, are resuming business; and the long thunder-storm we have had has tended, most undoubtedly, to clear and purify the commercial atmosphere. Mining property has improved with the general improvement; sellers are less numerous and less anxious, and buyers

are increased in number and in importunity. Quotations are firmer, and, in many cases, higher; and the general look of all interests is up, and their march, steadily forward. There is, we think, but one feature in this great public case for which we are not thankful—namely, the numerous discharges of workmen engaged in railway works, and the comparatively slack employment in the manufacturing districts. We fear that, as the winter hastens on, this will be found an increasing element of inconvenience and distress. But we can endure all, and assuredly reckon on passing shortly into a region of showers and sunshine, in a national sense, if the improvements, which have now happily commenced, go steadily forward to their consummation.

In another column will be found a letter from a correspondent, on the subject of working the mines of Ireland, from which it will be seen, that it is not from want of enterprise in the country—not from any difficulty of providing capital—not from the absence of a plenitude of labour, that the mineral riches of the strata of Ireland are so sparingly explored—but from the imbecile and cruel enactments of the laws made by the Irish Parliament themselves, in the time of the first Georges. That upwards of a century ago—when but comparatively little was known of the nature and extent of the mineral wealth of Ireland; and when anything to better estates for inheritors, under the law of primogeniture, was eagerly supported by the proprietors of the soil—such a law, or any others equally absurd, should pass, is not surprising; but it is surprising, not to say a disgrace to those proprietors in Ireland, of land, where valuable minerals are known to exist, that in the present enlightened age, when it is so clearly defined, that all restriction on productive industry are evils which cannot, and must not, be tolerated, a law preventing the leasing of mineral land, unless at a most exorbitant rent, should have been so long a stain on the statute book.

Many of the mineral lands of Ireland are held in trust for minors, imbeciles, and by ecclesiastical bodies, and the wealth beneath their feet is suffered to lie unproductive; while, if this most absurd of all absurd laws was repealed, and owners and trustees allowed to make unfettered bargains with capitalists and adventurers, a source of wealth would be opened up in the Sister Kingdom, which would give employment to thousands, enrich both the estates and the enterprising adventurer, and prove a blessing to the country at large.

We noticed, in the *Mining Journal* of last week, a meeting which had been held in Dublin on this subject, at which Mr. GRATTAN presided; and it is with much pleasure we observe, that the effects—or, rather, the prevention of beneficial effects—of this suicidal law, are awakening the most lively attention; and we trust the next session of Parliament will not be allowed to pass, without its total and unconditional repeal being effected. If a bill for the purpose was introduced, we cannot suppose any Member of the Legislature so insane, as to offer the slightest opposition.

It is of all things important, that the seas and sounds, which form the zone of our busy coasts, should be so buoyed and lighted, that the navigation of all the waters, proximate to these islands, may be rendered as safe and as commodious as the case possibly admits of. The northern coast of Cornwall, as projecting into a great and much frequented ocean, needed, on its sea margin, this kind of furniture, in a somewhat pre-eminent degree; and a new lighthouse on Trevoze Head, a little lower down than Padstow, is the first gift of that kind, which the whole northern sea-board of the county has yet received. When finished, it will be a double-light tower, with the lights at an elevation of about 200 ft.; and will, we doubt not, be an efficient beacon to warn some of danger, and a Pharos to turn others to a haven of shelter. In the long nights of the ensuing winter, it may be expected to cast its directing radiance seaward, and contribute to lessen the casualties incident to that somewhat exposed coast. As a matter of course, in due season, both Lloyd's, and the Trinity-house, will send to the outposts such notice and description of the new lights, as may bring both their erection and their situation to the knowledge of the shipping interest of the United Kingdom; and it was our purpose to contribute to that notice and publication, by this brief reference to so valuable a gift.

In another column will be found some remarks, on the explosion of the boiler of the *Cricketer*, from the *Sun*, which we have given at length, as we admire the spirit which led Mr. SMITH to risk an experiment, which, until the late melancholy catastrophe, turned out so eminently successful. We regret, with the *Sun*, that the trial of HASEMAN has been postponed, and must defer some intended remarks in consequence. Our contemporary observes, on the necessity of the trial, that the public may ascertain whether there is anything really dangerous in the peculiar construction of the engines used on board the *half-penny* boats, to which we will go further, and state, that, in our opinion, they are *unexceptionable*; the principle, that of WOLFF, has long been known, and, of late years, extensively employed—that there are engines on this principle working at the present time, and performing a higher duty, than those on any other principle, we think, will be denied by no one conversant with the subject. Mr. SMITH, we imagine, saw the economy of these engines, and also perceived that oscillating engines were becoming popular, secured, by patent, on the 3d of July, 1844, "certain improvements in steam-engines, boilers, and condensers"—the leading feature in such patent being the adaptation of WOLFF's principle to oscillating cylinders. The high-pressure and condensing system was shortly after this period introduced into the Thames, on board the *Ant* and the *Bee*; the principle had before been used on this river, but not in combination with oscillating cylinders. With this system the necessary attendant the high-pressure boiler followed; in this, also, no novelty, or increased danger, was introduced; and we will state, that, in our opinion, had the precaution, which was taken in the construction of the boilers (for here, in our opinion, lies the sole cause of the accident) for the *Ant* and *Bee* been persevered with in those of the *Cricketer*, the explosion would never have occurred. We imagine, that the fate of the man HASEMAN rests entirely on this point—no evidence touching him with the charge of tying down the valves. The question will, therefore, be, whether the boiler was, or was not, a safe instrument; and also, whether it had not been in a state that, only in our own minds, render it extraordinary that the explosion did not occur weeks—nay, months—prior to the 27th of August.

It will be in the memory of our readers, that we attributed the cause of explosion—whether erroneously, or not, time will show—to the faulty construction of the boiler; we objected altogether to the experiment of trying to rend the steam dome from the circular plate representing the boiler; recommended the necessity of "testing the strength of the remaining boiler;" and, prior to any report of Mr. LLOYD (which our readers will recollect), attributed it also, in a great measure, to the faulty construction of the boiler; and made use of the following expression:—"When the strength to resist fracture will be given at the weak and unstayed portion, instead of selecting the strongest part"—a suggestion which was afterwards carried out in the presence of Mr. LLOYD. We do not blame Mr. SMITH for the accident—if any blame attaches, it is to those to whom he deputed the carrying out his plans—for every practical man, who has examined the interior of the fractured boiler of the *Cricketer*, and compared it with those of the *Ant* and the *Bee*, the idea must have suggested itself, that either the boilers of the *Ant* and the *Bee* must have been unnecessarily strong, or those of the *Cricketer* dangerously weak. We hope, on the day of trial, all facts will be brought forward, that the safe state of the *Ant* and the *Bee* may be made public, and the true cause of the accident arrived at, that the public mind may be satisfied.



[FROM OUR PARIS CORRESPONDENT.]

The Customs department has just issued the following circular to its officers:—

The official *Moniteur* announces, that the Ministers of War and Public Works have just nominated a commission, which is charged to draw up a Royal ordinance, containing the modifications which it may be considered necessary to introduce into the law of 21st April, 1810, respecting mines, in order to make it applicable in Algeria, and to put it in harmony with the present situation of that country.

The general assembly of the Company of the Antonins and Mines Reunies is called for the 25th November, at Paris; and that of the Coal-Pits of Blanzv remains fixed for 7th December, at Chalons-sur-Saone.

Some time ago, I mentioned that the Minister of Marine had ordered an analization of the different descriptions of copper used for sheathing vessels in France and in England. It having appeared from this that the

The Lyons and Avignon Railway Company will, from the 20th, pay to the shareholders the first dividend of 91 fr. per share.

**BELGIUM.**—You lately published an account of the *importations* of coal, iron, &c., made into France during the first nine months of the present

year, compared with the corresponding periods of 1846 and 1845; here is an account of the *exportations* made by Belgium during the same periods:—

	1847. France.	1849. France.	1845. France.
Portative arms.....	3,578,354 Tons.	2,842,920 Tons.	2,406,814 Tons.
Coal.....	1,214,286	895,836	1,102,809
<i>Fontes en gueuses et fonte épures</i>	81,285	44,850	50,615
Bails.....	3,924	3,032	5,066
<i>Fonte courre.</i>	711,834	266,250	278,414
Works in for battu.....	726,838	462,760	1,100,928
Nails.....	4,158,712	3,621,301	4,168,117
Machines, &c., complete works } in iron } Ditto, detached pieces in iron and } cast-iron }	1,597,003  583,741	1,581,396  401,124	  —
Zinc (raw).....	3,797,412	3,401,753	3,863,559
Zinc, laminé.....	1,600,244	995,300	994,701

The cast-iron manufactory at Liege, has been ordered to construct some cannons for the Spanish Government. The orders sent to this establishment are becoming very considerable. I only hope that its prosperity is not increasing at the expense of that of England.

**REMEDY FOR FOUL AIR IN MINES.**—We have received a communication from Mr. D. Clark, of Launceston, in which he states that having re-

... and the ...

## NSC 65-15410-10

It appears from the Report of the Parliamentary Committee, which sat in 1897, that accidents from explosions in mines have become more frequent since the introduction of the "safety lamp" of Sir Humphrey Davy. This may, indeed, be partly owing to the ex-

Little improvement, indeed, can be expected whilst the present methods are pursued—whilst freedom from the fire-damp depends on the continual *course* of the air, and expelling the gas by force; or, whilst it is allowed to accumulate under vaults and recesses, and to be even purposely *holed in*, or confined by walls, stoppings, tran-doors, &c. And

Amidst all the investigations of eminent chemists and philosophers, as well as of practical men, for preventing the destructive effects of inflammable gas in mines, it appears rather surprising that their views should have been confined to such methods as that of consuming the gas in the mine, or expelling the dreaded enemy by force, by currents of

But one chief point seems not to have been adverted to by the miners, nor even by those who have professed to make it their study—namely: that it is the *confinement* of the gas which causes it to explode with destructive violence when fired; that it will not explode without violence, when free or unconfined, any more than loose gunpowder, which

Deep mines are thought to be more infested with the fire-damp, than more superficial ones. There are two causes to be assigned for this—first, in those mines which lie near the surface, more of the gas exhales, or finds its way into the atmosphere, than from deep ones; secondly, the presence of the superincumbent atmosphere, and the consequent expansion,

These facts considered, why not, I would ask, take advantage of the inherent property carburetted hydrogen to ascend, by allowing, from the moment of its emission, a free and unobstructed escape out of the works. This requires no ventilation, or forcing of currents of air through the mine, but simply a removal of all obstacles to its natural

It is true, that if, on the one hand, many expenses are saved, so, on the other, some additional work will be required in the method proposed—such as excavating the ascents, driving, or occasionally forming small shafts. These perforations should be about the central part of the excavation in actual progress, or rather towards the open, to release

This method is founded on self-evident and demonstrable facts, which need not be further insisted on here. The principle, indeed, is just that of the *drainage of land reversed* the water tending downwards, by its gravity; and the gas ascending, from its levity, buoyancy. But the gas will move with vastly greater velocity than water—the mo-

ety lamps, and the choice of these should be left to men of practical science. The experiments of a very accurate chemist, Mr. Pereira, seem to have proved that the lamp Upton and Roberts is the only one strictly entitled to the denomination of a "safety lamp;" and the same is borne out by the testimony of the late Dr. Birkbeck. The super-

commencing new works, it would seem desirable to commence at the summit, or p, which will lead to the more productive seams, and afford a natural ventilation and charge of gas, with little additional trouble. In point of fact, in all the more danger-

Balloons are now always filled with carburetted hydrogen; and the velocity with which they shoot into the air, when any considerable weight is detached, even in a highly rarefied atmosphere, and at great heights, was exemplified in the experiment which proved

When the Walls End Colliery exploded, some few years ago, with the loss of 101, it was said to be under the best ventilation, and a constant use of the safety lamp; the same was the case in a recent explosion. The same, too, was asserted of the explosion, about the same period, at Harrington—in which all in the mine (forty persons)

...to observation.

In corroboration of the plan now proposed, we have noticed, in perusing the *Affidavit of Evidence*, given before the Parliamentary Committee, several statements which are in accordance with the views we have now advanced—showing, too, that practical miners are not unaware of the tendency of the fire-damp to collect in all cavities under the roof

The late Mr. Biddle states, that, the deeper the mine, the greater will be the evolution of gas. It is less gaseous towards the crop (or surface); "because I conceive," he says, "that all the gas that can be expelled at the natural temperature of the atmosphere has ascended," and as it gets deeper and deeper, its escape into the atmosphere

circulate through, especially in the waste, and such a quantity of inflammable matter mixing with it, under the ceiling and next to the roof, that it will often fill the lamp with flame; whilst, in the air-course (only four or five feet wide), the air mixed with the inflammable matter travelled so rapidly, that one could scarcely keep the light in: out

In reply to a question from the chairman, a witness said, that a man was burned, and died of his wounds; "it was through his own carelessness: he was working on a level, and he went in, and held his candle too high." On another question—as to whether

From these witnesses, we also learn that, in some extensive mines, there are 100 acres of excavated coal, ventilated by one shaft, and the air has to travel 20 or 30 miles, to sweep over all the excavation. The air, passing over such an extent, must become highly charged with foul gases; and it shows the necessity of additional shafts, or some per-

"Yes,"—*"You admit,"* said the chairman (Mr. Pease), *"that the great desideratum in these inflammable mines is to carry off the accumulating gas from the waste?"*—Answer:—*"Yes."*—*"Can you suggest any means by which the air-coursing may be kept up throughout the body of the goaf, so as to keep it clear of the gas?"*—"I am not aware of any. I should

A recent writer, in one of the public prints, after enumerating the great variety of expenses which fall upon the coalowners, observes:—"They are, besides, subject to the continual risk of having their pits entirely destroyed (as in the case at Walls End) by one of those violent actions of nature, which have hitherto defied human foresight to anticipate it away?"

We shall, for the present, bring these topics to a close, by observing, that a free exit being given along the roof of the mine to the lighter and rarified air, the denser air passing in along the floor, or bottom, a constant circulation will be established, and these currents will be stronger in the denser mines, where the temperature is much increased.

Many proofs might be adduced to show, that the gas lodges long and abundantly under the roof of the mine, and that it mingles very slowly with atmospheric air, notwithstanding the motion caused by men and horses, and by the coursing or ventilation, dashing of the air, &c. Finally, at par. 1999, the Committee appear to have stumbled on the right

William IV., August 10, 1830. In the preamble of this Act, it is stated that there has been in existence a Stannaries Court for matters connected with tin and tinnors, but not for persons interested in copper and lead mines, and smelting of lead, and that it is desirable to unite the court of equity of the Vice-Chancellor of the County of Devon with the Stannaries Court.

Vice-Warden may make rules touching practice of the courts, and the old practice to continue until such rules are made. Vice-Warden ordaining a person having a share in a mine to pay money, may order a sale of his share, or of so much thereof, as shall be necessary to pay the sum and costs of sales. All

end of any half-year there should be a balance sufficient for moiety of salaries for the next, no assessment to be made, but the returns to be made nevertheless: manager of mines subject to penalty of 50*l*. for making false returns. Cases brought before into Court of Queen's Bench on showing good cause, and all

Pickering, the contractor, stated that about 1200 others would be discharged from contract works in which he is concerned at other parts of the country. We hear that there will be no hindrance to the progress of the London and York loop

purpose a temporary station on the east side of the tunnel, at Manton, is talked of—so that in the interim of the tunnel being completed, passengers and goods may be conveyed by horse-power from Oakham to that place, and by locomotives power the remainder of the distance.—*Edinb.*

dipped in water, to prevent its becoming too much heated. It may be mentioned, that a bar of iron, of almost any size, may be sundered, while hot, by the simple application of common roll brimstone.—*The Builder.*

† The air of mines (especially of deep ones) is, in general, warmer, I presume, by some degrees, than that at the surface; and, during such condition, a constant current and



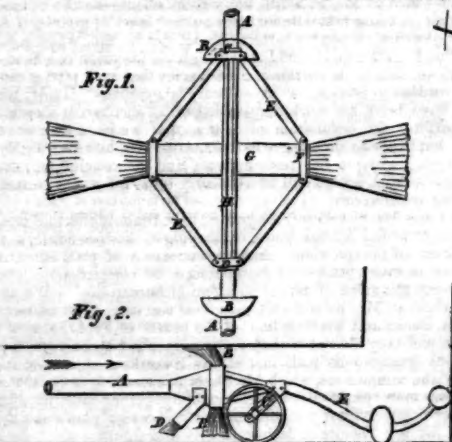
## IMPROVEMENTS IN PROPULSION ON LAND AND WATER.

[Specification of patent granted to Johann G. Seyrig, of New Lenton, Nottingham, for certain improvements in propelling on land and on water. Patent dated May 6, 1847.]

This invention has, for its object, to make available the power derivable from a fall or pressure of water from the height of the water-line outside of a vessel, to any lower point on the inside thereof; and employing such power, in combination with steam, or other power, for the purposes of propelling on water. The specification sets forth several modifications, contained in several sheets of drawings, illustrative thereof, from which, as far as one can see, surrounded by a misty waste of extraordinary phraseology, and the superabundance of erasures and interlineations which this specification rejoices in, it appears that the principal feature of the invention consists in the employment of the external water in such manner, that it is caused to act upon a mechanical arrangement, which the inventor denominates a "turbine"—a wheel, placed horizontally, and formed of curved vanes, or plates, placed vertically, upon which the water acts, and imparts motion thereto, as also the shaft upon which it is fixed. Connected with this turbine, by bevelled gearing, there is a vertical screw propeller, which receives motion from a steam-engine, or other prime mover; one modification of this arrangement consists in ejecting air and water from the inside of the vessel to be propelled. That part of the invention which relates to propelling on land, consists simply in the application of the well-known mechanical arrangement for converting rectilinear into rotary motion, by the traversing of a pin, or stud, along a grooved channel or quick thread cut around a cylinder of metal. The only novelty connected with this part of the invention appears to be, the means by which the steam (employed for imparting motion to the piston, to which the traversing pin before mentioned is attached) is prevented from passing on one side of the piston to the other along the said grooved channel, which is effected by the application of a series of sliding or telescopic tubes—one of which is attached to the piston, and moves therewith. The same means are here employed for converting rectilinear into rotary motion, as those employed in regard to that part of this specification, which has reference to propelling on water, with a slight difference in the means adopted for preventing the steam passing along the grooved channel before mentioned. It consists in the application of a cylinder of vulcanised India-rubber, the upper extremity of which is fixed to the cylinder lid, and the lower extremity to the bottom of the cylinder, the piston being fixed thereto, the India-rubber being kept "diametrically" (as the patentee is pleased to term it) distended by springs, which are illustrated by "dots" on the drawings. These little peculiarities, however, form but a slight exemplar of the defects of this document. The claims are for the arrangements, as described and set forth.

Patent-office and Designs Registry, 210, Strand, Nov. 9.

## IMPROVEMENTS IN SWEEPING CHIMNEYS.



[Specification of patent granted to Lemuel Wellman Wright, of Chalford, Gloucester, for an invention of certain improvements in machinery, or apparatus, for sweeping or cleansing chimneys, flues, and other similar purposes. Patent dated May 4, 1847.]

This invention comprises various improvements, which are severally illustrated by a sheet of drawings annexed to the specification. The principle upon which these improvements are based, consists in rendering available the elastic property of vulcanised India-rubber, for the purpose of enabling the sweeping brushes to collapse and expand, according to the varying size of the flue, or chimney, in which they are to be employed. There is also a new mode of forming an elastic or yielding tube, which shall possess all the properties of universal joints, at the points of junction of each length of tube; this is effected, by fixing a short tube of vulcanised India-rubber over the ends of such tubes after they are brought together, enabling each tube to have lateral movement, independent of the tube adjoining it. As we consider it unnecessary to particularise separately the several arrangements set forth in this document, we shall confine ourselves to the illustrations of two of the methods, as examples of these improvements. The fig. 1 of the accompanying diagram exhibits an elevation of that part of an apparatus to which the brushes are attached; A A marks the tube; B B, caps; C, a collar, fixed upon the tube; B, D, a collar, at all times moveable upon the tube, B. To each collar there are attached, by pins, any convenient number of rods, E E, of which the diagram exhibits two—the opposite ends of each pair of such rods being connected together by a link-piece, F, against which, and encircling the entire number, there is an endless belt, G, of vulcanised India-rubber, in which the bristles, or whalebone, which form the brush, are fixed; and the size of such belt is such, as to keep the brush in a collapsed state, the expansion thereof being effected by strips of vulcanised India-rubber, being secured by their ends to the collars, C and D—the elastic power of which being greater than that of the belt, G, has the effect of bringing the collars, C and D, together, and thereby effecting the expansion of the aforesaid belt and brushes fixed thereto. In using this brush, the inventor states, that, upon introducing it into the chimney, or flue, he collapses the said belt, by pulling down the moveable collar, and holding it in that position by a catch, until it has reached the top of the flue, or chimney, when, by releasing it, the brush is forcibly pressed against the chimney, and, being moved downwards, cleanses it; but how this holding and releasing is to be effected, is neither shown nor described—consequently, remains to be discovered.

This specification is another specimen of the blundering and careless manner adopted by too many inventors, who seem unaware of the deep importance of this document. In this case, several parts of the machinery, or apparatus, illustrated by the drawing, are not marked with the proper letters of reference, as mentioned in the specification. In some cases, there are no letters of reference whatever placed upon parts referred to in the specification, one passage of which is very remarkable. After describing the arrangement of the brushes upon a cylinder of India-rubber, the inventor states, that the effect produced by such arrangement will be as follows:—"The brush, in ascending the chimney, will collapse; and the reverse will take place in descending," by which the downward movement only will bring the brush into action. This is evidently an error on the part of the person employed to engross the document; but does not excuse its being placed on the Rolls in such a state.

The fig. 2 exhibits another improvement, which is calculated for sweeping or cleansing horizontal flues of furnaces, &c. A marks the tube; B, the brush; C, one of two wheels, mounted upon an axis, which is placed within two inclined slots; D, a short brush, or scraper; E, an elastic tube, formed of a bundle of strips of whalebone, surrounded by vulcanised India-rubber. The effect of this arrangement is as follows:—Upon introducing this apparatus into the flue, the wheels, resting upon the bottom thereof, will cause the inclined slots to be moved upwards upon the axis on which the wheels are mounted, by which the top side of the brush will be forced against the top of the flue, and, as it is moved forward, will cleanse the same. A reverse or backward movement of the machine will cause the inclined slots to descend upon the axis of the wheels, by which the brush will be lowered, and thereby effect the cleansing of the bottom of the flue. The remaining arrangements consist in the application of air-tight vessels of India-rubber, around which the brush is disposed; and, after such brush has been passed upon the chimney, or flue, the inventor proposes inflating the said vessel with compressed air, which he effects by means of an air-pump—the said vessel being furnished with suitable valves. This forms rather an amusing apparatus, as its practical adoption will either render it necessary that the "knight of the brush"

shall provide himself with an air-pump—the use of which will, probably, exceed the scope of his knowledge—or that the tenant of every house in which it is to be used, shall have a pump, other than the usual domestic appurtenance—a cold water pump—in which latter case a liberal discount for sweeping ought, of course, to be allowed. The patentee has set forth no specific claims to the invention.

Patent-office and Designs Registry, 210, Strand, Nov. 10.

## IMPROVEMENTS IN RAILWAY CONSTRUCTION.

[Charles Fox, of Trafalgar-square, Charing Cross, engineer, and John Coop Hadden, of Upper Webburn-place, civil engineer, for Improvements in Railway Chairs and Switches, in Trenails or Fastenings, and in Machinery for preparing Railway Sleepers. Patent dated Nov. 6th, 1847.]

This invention comprises four distinct improvements: the first of which relates to railway chairs, and consists in forming the same in the following manner:—The under side of the chair has a projection, or stud, formed upon it, which is intended to take into a recess formed, as hereafter described, in the wooden sleeper upon which it is to be placed; the taper holes in this chair, intended to receive the trenail, have their extremities rounded, by which injury to the trenail is prevented; and certain means whereby these chairs may be formed in moulds, and by which the rounded parts of the holes, before mentioned, may be produced, are set forth in the specification. The second of these improvements relates to railway switches, to be employed at those parts of a line of railway where there are sidings; and such improvements consist in arranging and actuating the switches, so that they shall move vertically, instead of horizontally, as hitherto. This is effected in the following manner:—In contact with the inner edge of that rail, which forms the siding, there is placed a taper piece of metal, which the inventor calls a tongue rail; and such rail is maintained in a proper position by a piece of metal of the length of this tongue rail, and placed at such a distance from the siding rail as that the said tongue rail shall have free liberty of vertical movement between them and the chairs employed for retaining the siding rails, main rails, and piece of metal which guides the said tongue rail in its proper course, are exhibited, by the drawings, as being peculiarly and suitably constructed for that purpose. In order to effect the raising and lowering of this tongue rail, there is a piece of metal placed at the underside thereof, to which are rivetted wedge-shaped pieces; and such pieces are supported by, and move upon, inclined surfaces, formed, and suitably placed, for the purpose; and these wedge-shaped pieces receive motion from a lever handle, to be actuated by the attendant at this part of the line of railway, by which the said tongue rail may either be raised, so as to form a continuation of the main line, or be lowered, by which the course of the carriages will be diverted to the siding; and where there are two such tongue rails employed, one at each rail, the wedge-shaped pieces should be placed in opposite directions, in order that the lowering of one tongue rail may effect the raising of the other, so as to ensure the continuation of the siding, or main rails, as occasion may require. The patentees remark that, in cases where only one tongue rail is employed, they propose employing weights to keep the tongue rail in that position in which it is most frequently required to be used—the reverse position being effected by the means before described. The third part of these improvements relates to trenails, and consists in certain new self-acting machines to be employed for producing the particular formation thereof. The machinery exhibited by the illustrative drawings, annexed to the specification, are very ingenious, and appear well calculated for the purpose; but as such machinery only serves to exemplify the means by which these improvements may be carried into practical effect, and the description of it would occupy much space, we must refrain from giving it.

The fourth part relates to the preparation of railway sleepers, and consists in the employment of certain new and ingeniously contrived machines for recessing such portions of the sleeper as are destined to receive the chairs before mentioned. The drawings exhibit a variety of cutting tools to be employed for the purpose, as also the means by which each sleeper is held in its proper position during such operation, and by which the distance which each chair should be asunder is preserved. The claims are separately set forth after describing each separate improvement; but, in general terms, are for the arrangements and combinations described and represented, and for the purposes set forth.

We regret that the length of this specification, which comprises six skins of parchment, and five sheets of drawings, prevents our going more minutely into it; but as the details would occupy a considerable space in this Journal, we must refer our readers, who feel much interested in the invention, to the document itself, at the Chancery Inrolment Office, Chancery-lane.

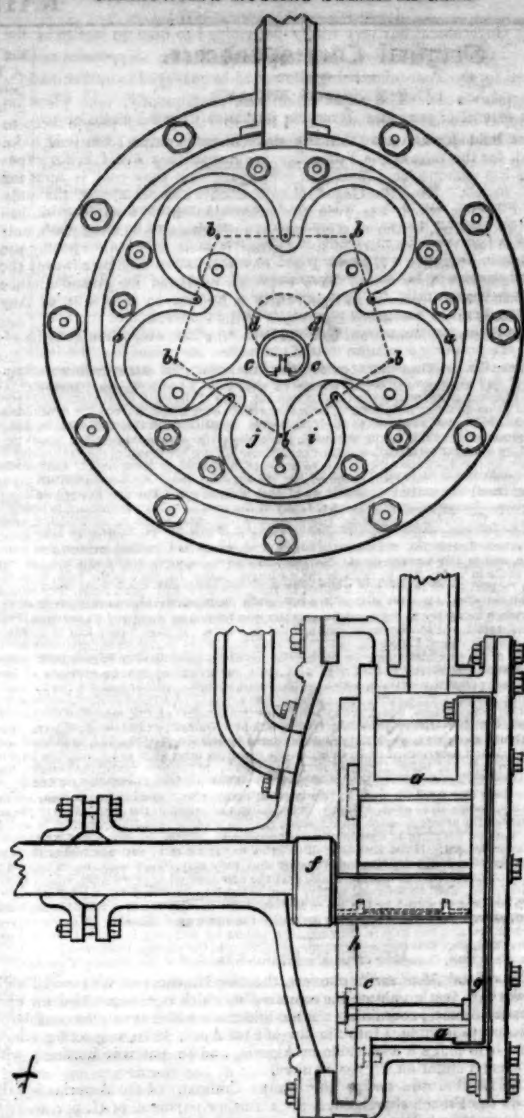
Patent-office and Designs Registry, 210, Strand, Nov. 9.

**NEW MODE OF TRUSSING CAST-IRON GIRDERS.**—Mr. Gibbons, of Corby's Hall Iron-Works, has patented a new method of trussing cast-iron girders, in which the rigid trusses heretofore employed are abandoned, and elastic ones substituted. We will attempt to describe it, by supposing a girder of considerable length, formed of three sections, bolted together, through flanges at the ends of each, in the usual manner. Mr. Gibbons now introduces beneath the centre section a powerful spring, made exactly similar to the bearing springs of railway carriages, with the convex side abutting on the girder; and wrought-iron truss-rods are fastened to each end of this spring, and bolted up tight to flanges, cast at the extreme ends of the two outer sections of the girder. Where the girders are of considerable width, a number of springs may be used, ranged side by side; or smaller springs may be used, and placed two together, with their concave faces inwards, one under each joint of the sections of girder, and one in the centre, trussed up tight by suspension rods. The springs should, of course, be tested previous to being fixed, and should be allowed but little play; perhaps, half-an-inch would, in nearly all cases, be sufficient.

**WROUGHT-IRON GIRDER BRIDGES.**—Mr. Fairbairn, of Manchester, who, it will be remembered, made, in conjunction with Mr. Eaton Hodgkinson, those numerous experiments on the strength of sheet-iron tubular girders, which confirmed the confidence of Mr. Stephenson in his plan for bridges of this description over the Conway River and the Menai Straits, having erected a tubular girder bridge on the Blackburn and Bolton Railway, we are now enabled to describe it. During the experiments, it was ascertained that the strongest form of hollow girder was the rectangular; the thickness of the top plate, in proportion to the bottom, should be as 5 to 3. It was also found, that the relative strength of a tube thus formed, with the thickest plates at the top, and reversed, with the thickest plates at the bottom, were as 82 to 37. The bridge under notice is 66 feet long, having a clear 60 feet between the bearings. There are three girders, two forming the parapets of the bridge, and one in the centre, between the two lines of rails; they are formed with top, bottom, and centre cells—the latter being about double the height of the two former, which are, however, wider than the centre one, projecting on each side. The thickness of the plates is half-an-inch for the sides and top, and three-eighths of an inch for the bottom, the whole firmly rivetted to angle iron. The cross beams may be constructed of either cast-iron, wrought-iron, or wood, as may be considered most desirable; they are bolted and screwed up to the projecting parts of the bottom cells by means of strong iron straps, and to the top by a long vertical bolt, passing through all three cells, and fastened by screw nuts on the outside. In testing the weight which this bridge would support, three locomotive engines, without their tenders, each weighing 20 tons, were coupled together, and which just covered the bridge from end to end. They were made to pass over at rates of speed varying from 5 to 20 and 25 miles per hour, which, without any perceptible difference at the different rates, caused a deflection of three-tenths of an inch. Wedges, or incline planes, were then laid on the rails, allowing the engines to fall suddenly 1 in. and 1½ in. respectively, at a velocity of 8 or 10 miles an hour, when the deflection in the first instance was 0.35 of a foot, and in the latter 0.45, or nearly half-an-inch. So far the bearing powers of this bridge are perfectly satisfactory.

**IMPROVEMENTS IN BREAKS.**—A patent has been obtained for a new description of break by a Mr. Tibbett, which acts as a drag on the wheel, at the same time as the break block is pressed down with great force upon the rails. The break is suspended between the wheels from a strong bearing spring, which always keeps it away from the wheel and rail when not wanted. It is completely under the command of the guard, being acted on by powerful levers, which act on a flanged wheel, or barrel, placed in the centre of the axle, which has a spiral thread cut on its surface, into which cogs, or teeth, on the under sides of the levers, take, and prevent the spring from pulling up the break block, as long as it is necessary to keep it in action.

## GALLOWAY'S ROTARY STEAM-ENGINE.



The uniform failure of every attempt heretofore made to produce an efficient and economical rotary engine, has induced a natural and very general belief that it is a mechanical impossibility. It is, therefore, to be expected that the announcement of every new rotary engine should be received with much of doubt and scepticism; but, if it can be established that this new attempt differs in toto from all its numerous host of predecessors, it may at least be claimed for it that it is entitled to calm consideration, since former failures furnish no argument against the efficiency of this particular engine; and still more, as emanating from a person whose experience in rotary engines is known to be considerable.

**DESCRIPTION OF THE INVENTION.**—The figures are sections of the engine. It will be seen, by fig. 1, that the engine consists of a fixed vessel, A, which performs the office of the cylinder of an ordinary engine; the form is obtained by striking segments of circles from the centres, a, b, c. The fig. c, which may be called the piston, is struck from the same centres. Now, if the centre of c be compelled to move in the path of the dotted circle, d, d, each of the arms will successively assume the position, e, and cavities (as i, j), formed by the contacts of the segments, will be successively enlarging and contracting—thus forming recipients for the action of the steam by apertures through the ends, not necessary to be shown. By fig. 2, it will be understood in what manner the motion is communicated to the machinery; f, is a crank—the pin of which is inserted into the centre of the piston, and is, consequently, carried round with it. It will be seen, as the segments move, the tangents to the points of contact are always parallel to each other; and that the wear, both of the fulcrum and the piston segments, must be uniform. The contact of the segments is ensured by a spring, placed in a groove in the crank pin; this, however, is only useful at starting, the centrifugal action producing contact when the engine is running. To preserve the flat ends of the piston and cylinder steam-tight, the plate g (fig. 2) is bolted to the cylinder, and the plate, h, to the piston; the wear, therefore, between the flat surfaces is equal—that is to say, as the surfaces of the piston and end plate wear, those of the cylinder end and the plate, fixed to the piston, wear also—and thus the contact between the flat surfaces is preserved. It will be seen, that the number of arms may be varied. The diagrams represent the experimental engine. An engine, of about 4-horse power, has been constructed and tested in various ways—namely: at the Great Western Railway engineers' shop at Paddington, where, as an experiment, it was employed to drive the lathes, and other machinery, during the repair of the company's own engine; at the workshop of the Earl of Orkney, Taplow Court, Berks; and, lastly, on the premises of Mr. Tyrrell, engineer, at Deptford, where it is now employed to drive a fan-blower, which is calculated as requiring from 4½ to 5-horse power.

By these experiments (which have been made and witnessed by competent persons, selected as having no interest in the result), the following facts have been established:—1. The engine is absolutely steam-tight; this fact at once places it advantageously in contrast with other rotary engines. 2. Its motion and power are perfectly uniform at all velocities. 3. The number of revolutions made in a given time do not sensibly affect the power. 4. The rubbing surfaces prove the absence of any perceptible wear, rather indicating a correcting than a deteriorating action. 5. The consumption of water is exceedingly small, proving that, in consumption of fuel, it is economical, as compared to the reciprocating engine.

The possession of these qualities call for serious attention. The great prime movers of the day—the driving-wheel and the screw—demand a velocity in the piston never dreamt of by the early engineers; and this increase of velocity is admitted to be followed by a loss of effect, which does not occur at the ordinary speed of the piston. An engine, therefore, which conforms to the required increase of velocity, without any loss of effect—or which can, in other words, make 400 revolutions in the time the reciprocating engine makes 200 revolutions, with the same rate only of expenditure in fuel, power for power—will be admitted to be a desideratum of the first importance, and the full development of the properties of such an engine must be attended with a corresponding extension of the benefits of steam transit by land and water; nor will its advantages be confined to these applications of steam, but will be useful in all the various works where rotary motion is required.

The proprietors of Galloway's patent beg, therefore, to call public attention to what has been realised by this essay—meantime, other engines are making, and they (the proprietors) are ready either to undertake the supply of engines, or to grant licenses to manufacturers. The engine may be seen at work, by application, at the office of the proprietors, 13, John-street, Adelphi; or at the chambers of the patentee, 14, Buckingham-st., Adelphi.

**WHAT IS MAN?**—Man (says the *Cleveland Herald*, United States), is a reasoning animal, who paints with the sunbeams, travels by steam, and talks by lightning.



## Original Correspondence.

## THE MINES OF IRELAND.

Sir,—In several of your late Journals, you have directed attention to the mines of Ireland, suggesting that national advantage might be derived, by applying public money to the extent of half a million for working those mines. Believe me, my dear Sir, that we in Ireland do not require public money for working our mines; what we do want is improved legislation, as regards the leasing powers of proprietors of mines, and equality with our friends in Cornwall, in the mode of rating mines for relief of the poor. Your readers in England will be surprised to learn, that a very large majority of proprietors in Ireland are restrained by an Act of the Irish Parliament (10th George I., c. 5), from granting a mining lease at a lower rent than one-tenth of the gross produce, which exceeds double the average rent payable for the mines of Cornwall, of which one-tenth (only two-fifths) are properly available to the proprietor in possession, the remaining three-fifths being reserved for the inheritor. In some instances proprietors and lessees, not being aware of this law, have arranged leases at lower rents than the law authorities; but these leases being invalid may be cancelled, and no company or individual would embark capital in opening mines under the circumstances; whereas, if proprietors who are tenants for life, or under settlement, corporations, lay and ecclesiastical, &c., were authorised to lease mines at the value, agreeably to their powers for leasing land, the sound of pick and gad would gladden the hearts of our labourers in extensive districts, now depending upon Government relief for existence. Another obstruction to the working of mines in Ireland has arisen from the mode adopted for valuing and rating mines for relief of the poor. The valuator for the district in which the mine is situated, and who seldom sees further into a stone than the man who holds the pick, is directed to rate the mine for such sum as he thinks a solvent tenant could afford to pay as rent—a system which has produced the following occurrences: a mine was rated by the valuator for 10,000*l.* per annum, the alleged profits of the company working the mine, which produced a protest and appeal to the Poor Law Commissioners, who repeated their previous order to the guardians, who, nevertheless, adhered to the valuator's erroneous report; an appeal was lodged, and, prior to the hearing thereof, the guardians proposed to reduce the valuation one-half, which was submitted to, although in Cornwall the valuation would have been the actual rent payable for the mine (about 2000*l.*), and the rate thereon would have been paid by the landlord; whereas, in Ireland the company were obliged to pay the rate on 5000*l.*, deducting from the landlord only one-half of the poundage rate on 2000*l.* These obstructions to mining in Ireland have, I understand, been brought under the notice of the Irish Government, in the hope that the law and practice here may be assimilated to those which prevail in England; and your friends and readers here rely on your valuable aid, in placing the subject before the public in your usual effective style, so as to elicit favourable consideration in Parliament, from whence alone we can hope for relief.—OSERVER: Dublin, Nov. 4.

## MINING IN IRELAND.

Sir,—I have seen, with much pleasure, the deep interest evinced by you, in the welfare of the Irish people generally; for, although your allusions are principally to the lower class of Irish, still the benefit of them will, in a much greater degree, benefit the higher classes; and feeling, as I do, the motives by which you have been influenced, I will contribute, hand and heart, with my slender ability and knowledge of the country, to an object in itself so generous and praiseworthy. Ireland, taken as a whole, geologically speaking, is composed of granite, primitive clay-slate, conglomerate mountain limestone, and coal measures. This island contains a greater proportion of limestone than any other part of the United Kingdom; and the stratification extends from Dublin to Limerick, with the exception of five or six miles of clay-slate, which is crossed on the road at Bird-hill, three or four miles from Nenagh, and 10 miles from Limerick. This limestone rock, or strata, then extends 10 or 15 miles southward, towards Cork, where it meets the clay-slate; then from Limerick to Clare and Ennis, and northward as far as Galway, bordering on the north coast for a great extent, joined on either side by the clay-slate, which, on the coast north-east, around through Monaghan and Armagh, where the limestone comes in, which extends on the south coast as far as Dublin; then comes in the granite for some miles, taking an oblique direction through the county of Dublin into Wicklow, forming the "Sugar Loaf Mountain." Several lead mines, in the foot of this mountain, have been found, and profitably worked in lodes, in channels of mica, running through the granite. The celebrated mines of Wicklow and Waterford must be well known to all miners residing in that country, as also the abundance of labour afforded—the many thousands supported and fed by them, as also the small capital invested in the first instance, and the handsome profits paid to the adventurers in them. No man, with slender knowledge of this, can but regret the want of capital and skill in developing the mineral wealth, which, for a century, lies hidden in many places, taking the country on the south coast, all the way from Dublin through the county of Cork. Again, the county of Galway abounds on the north-east coast with primitive clay-slate, filled with mineral veins, which is usual in such rocks. I have often taken from them the finest specimens of lead ore. The same will hold good through the whole of the north; occasional rich bunches of lead ore have been found in the limestone, in the county of Clare; and mines, very rich in silver, have been found, and are still in course of being worked.

The "Shale Grit Mountain," Tipperary, contains many veins of lead, rich in silver, so far as they have been worked, yielding a return of many thousand pounds, nearly paying the cost of working. Having now spent my slender thread, on the outline of geology and mines in the Sister Isle, I would solicit, most earnestly, the co-operation of friends, as miners residing in the country, for such information as their situations and opportunities afford them, without the least interference with their employer's business or matters; this may be fearlessly asked, as being the duty of every man in the present trying crisis. Had Ireland been situated, with its geological features, in South Australia, in New Zealand, or in Canada, or the United States, there would, I think, be plenty of people to speculate, to explore it properly in a mining point of view; but poor Ireland is left, with her dying and starving population, to slumber—the means of subsistence and even comfort being hidden within a few fathoms of the surface, while even the surface soil is starved for the want of its development. What could the Government of this country, who have so generously contributed to Ireland, now do, better than to have the whole country searched by scientific and practical miners, and have fair and honest reports laid before them, of the probability of employing the poor from the source of mining.—A WELL-WISHER: Nov. 4.

## THE MIXED GAUGE QUESTION.

Sir,—I trust you will permit me, through your valuable and widely-circulated paper, to make a few remarks, in answer to an article, which appeared in the *Morning Herald*, respecting the mixed gauges, on the opening of the Gloucester and Cheltenham Railway. It appears, that rotten "monopolists" and "eccentric characters" may find their causes strongly defended by your contemporary—in fact, its columns appear almost devoted to such purposes; and it has certainly maintained its character, in trumpeting to the world Mr. Brunel's mixed gauge delusion. In order to give weight to their assertions, the writer of the article in question states as follows:—"We walked over Mr. Brunel's arrangement with Mr. Stephenson's report in our hand, and from the simplicity of the system, we were surprised that there should be any existing difference in opinion between two such scientific gentlemen as Mr. Stephenson and Mr. Brunel." Now, Sir, I cannot imagine how the extravagant notions and confused ideas of Mr. Brunel, can at all be brought into a comparison with the practical and straightforward engineering proceedings of Mr. R. Stephenson—and in which way your contemporary makes the scientific comparison, I am at a loss to conceive. I will not detract, nor yet listen to what detraction utters; but simply investigate Mr. Brunel's proceedings, and leave it to your readers to draw their own comparison. Mr. Brunel, on Parliamentary Committees, last session, proposed to introduce the double gauge system on upwards of 400 miles of railway. Can Mr. Brunel, after finding the fallacy of his matured broad gauge system, entertain the least consideration, or respect, for the shareholders of the Great Western Railway, when he persists in pursuing such erroneous propositions? It is evident, from Mr. Brunel's own statements, that the extra cost of the land, materials, workmanship, &c., required for the broad gauge, averages 3500*l.* per mile—say, for 400 miles, will show, 3500*l.* × 400 miles = 1,400,000*l.*, which sum, for extra works, has already been squandered away. The second additional outlay recommended by this "eccentric" gentleman, is 400 miles of railway on

the double gauge system, at a cost of 5,974*l.* per mile, will require—5974*l.* × 400 miles = 2,389,600*l.*—so that, in addition to the 1,400,000*l.* expended, he now proposes that the company should lay down the double gauge for 400 miles in length, at a cost of 2,389,600*l.*; and which, when completed, would be only equal to the single gauge, and not capable of doing one little more work. Again, taking the extra capital already expended for the broad gauge, and the capital required for the mixed gauges, together amount to 3,789,600*l.*, which sum (assuming the average cost of the English railway at 20,000*l.* per mile) would complete 189 miles of railway on the narrow gauge principle.

Such are the engineering achievements of Mr. Brunel, which are trumpeted to the world by the "broad gauge" mouth-piece, the *Morning Herald*. If Mr. Brunel, and the directors of the Great Western Railway, find that it is requisite, and to the direct interest of the company, to harmonise with the narrow gauge companies, why not acknowledge their blunder, and at once alter the 400 miles, already constructed, to the narrow gauge, and which would only cost about 800*l.* per mile, or 320,000*l.* for the whole distance; and of the two great evils choose the least? But, no; Mr. Brunel's ambition will not permit him to submit to such a course. Much rather would he deprive the shareholders of their last shilling, to gratify his extravagant and complicated projects, than propose an honest straightforward course, which would give universal harmony to railway workings, and relieve the Great Western Company from their present perilous dilemma. Mr. Editor, having laid these few observations before the public, I invite Mr. Brunel to refute the above statements, if he can; and I should also like to see in what manner the *Morning Herald* can now compare Mr. Brunel's engineering abilities with those of Mr. R. Stephenson's, M.P.?

London, Nov. 11. CIVIL ENGINEER.

## METALLIC PISTONS—GOODFELLOW, MATHER, AND SPILLER.

Sir,—My attention having been attracted by the metallic piston advertisements in your valuable Journal, likewise the statement which appears in your last Number respecting one of them, I beg to offer a few remarks upon the subject. The advertisements alluded to, are Mr. Goodfellow's, of Hyde, and Messrs. W. and C. Mather's, of Salford Iron-Works. My object is not particularly to discuss the good and bad properties of these inventions, but it is in justice to others of inventive genius, who have laboured to improve and perfect that important piece of steam-engine—the piston, and who ought, and must participate in, and have their share of honour, if not of profit, for their trouble.

Mr. Goodfellow distinctly claims, as the important feature of his invention, the vertical and lateral pressure—or, in more homely terms, the upward and downward pressure—against the top plate and the surface part of the piston block, and outwards to the cylinder. Now, I beg to state that this novelty does not belong to either Mr. Goodfellow, or his antagonists, Messrs. W. and C. Mather. If not the first, I can say a previous inventor to Mr. Goodfellow, is one of our most talented and respected engineers, Mr. Spiller, M.I.C.E., of Battersea; and I believe, in more instances than one, the fruits of his inventions have been taken to market by others. Mr. Goodfellow, in his advertisement, calls the attention of the public to the trial, in the case of Goodfellow v. Barker, tried in the Exchequer Court, September, 1846; and how he established, for a second time, his claim to the piston, possessing the two properties alluded to—how he can claim the originality of this, puzzles more than myself. I was in court on the occasion of the trial, from beginning to end of proceedings, and saw Mr. Spiller produce a piston that had been at work in one of his engines, also possessing the same properties. That you may see I am conversant with the subject in question, which is beginning to excite the greatest interest amongst engineers in general, and also for the purpose of bearing out my remarks, I will give a brief description of the different pistons.

Mr. Goodfellow's is composed of three annular rings of a bevil form, or, to all appearance, similar to a length of square bar-iron split down the centre across the corners, or like a solid piece of angle iron. This is turned into a circle, or ring, forming a bevil from the inside—two of which compose the outer rings. The inner spring, or double cone, may be imagined as another ring of nearly alike form, turned into a less diameter, and placed between the two rings presenting its two corresponding bevils to the bevils on the outer rings, and, being compressed together by the top plate gives it the compound elasticity he states it possesses: he has, likewise, introduced some very ingenious contrivances—such as saw cuts irregularly divided round the outside of the double cone ring—for the purpose of giving it elasticity, which, otherwise, it would not have.

Messrs. W. and C. Mather's piston possesses both vertical and lateral pressure—each property acting separately, and not combined, as in Mr. Goodfellow's. The packing of this piston is an helix, or peculiar cut spiral, encased in another one a little different in form, as regards the pitch at which it is cut: it has flanges inwards, so that at the vertical spring, or pressure, of the inner helix will act upon it. The principal feature of this piston, I believe, is, that both the outward and vertical elasticity is given it whilst in the workman's hands, which it is impossible to alter afterwards, either by screwing down the top plate, or by any other means. The inventors contend that this piston has no more pressure, or causes more friction, when new, than after working five or ten years.

Respecting the third (Mr. Spiller's) piston, its block has two grooves, or recesses, turned into its diameter, to receive two sets of segments. These are ingeniously expanded outwards by small springs likewise, upwards and downwards; in addition to this, he cleverly introduces steam to assist the springs, by pressing the segments in a vertical and lateral direction; the steam so introduced, is prevented from passing the piston by the segments, forming a tight joint on the middle surface of the block. If this is not a piston acting vertically and laterally, I really cannot pretend to say what it is—in fact, this was admitted in court on the occasion of the trial, by judge and jury, and all the eminent engineers present. Mr. Spiller proved that he fitted engines into steam-boats using this piston, three or four years prior to the date of Mr. Goodfellow's patent.

I am much surprised that Mr. Goodfellow should lay claim to a novelty which has been satisfactorily proved to have been the invention of others; supposing his invention to have been original on his part, I think he might have been contented with the extraordinary patronage bestowed upon him, according to his advertisement. It being my wish and desire to see every mechanical invention stand purely on its own merits, I have carried my remarks to a greater length than I originally intended to do, for which, Mr. Editor, I beg to apologise.—J. HUNT: Kennington Oval, Nov. 9.

## IRON GIRDER BRIDGES.

Sir,—The question of the strength and stability of rigid iron bridges for railways, is one which is causing much interest, among not only engineers, but all parties officially connected with railways. In consequence of the failure of a few girder bridges, on a plan, the adoption of which is of modern date, an opinion seems to be gaining ground, that they are dangerous *per se*, and ought to be abandoned; and that the trussing cast-iron girders, with wrought-iron stays, is wrong in principle, and worse than useless. Now, Sir, it can be clearly shown, that there is no other material so applicable to trussing cast-iron girders with good effect; and, if a proper principle is adopted, a girder, which, in itself, is totally unfit to support a certain weight, can be rendered perfectly efficient by wrought-iron support. The principal objection to the use of wrought-iron trusses to cast beams, or girders, is, that the two metals expand and contract in different ratios at the same temperature. Now, this property, I contend, may be made available to the most successful results, in precisely the same manner as the compensating pendulum of a clock, made of alternate bars of steel and brass, which, expanding in different degrees by heat, act as a check on each other, keep the pendulum invariably of nearly the same length, and produce the most uniform motion throughout the works. I should be glad to hear some of your correspondents on bridge-building give their reasons for objecting to the union of the two metals.

High-st., Southcark, Nov. 10.

## AERIAL NAVIGATION.

Sir,—Thanking you for your favourable notice of my pamphlet on the subject of aerial navigation, in the last Number of your valuable paper, I may observe, that there is one point I think you overlook in the project—that the buoyant power of the gas is not expected to render any material assistance; and, therefore, its gradual exhaustion will not greatly affect the flight—in fact, the gases best adapted to the purpose, are nearly equal in specific gravity to atmospheric air—olefiant gas being 0.97, and oil gas 0.9. Then the diminished surface, opposed to the air in its progress, when the gas is withdrawn from the balloon, will, probably, more than compensate for the loss of buoyancy. Whether the explosions are objectionable I must leave to your mature consideration; but I fear they cannot be dispensed with.—DÆDALUS BRITANNICUS: London, Nov. 9.

## MR. SWEETLOVE ON THE VENTILATION OF COLLIERIES.

Sir,—Having taken care that Mr. Sweetlove's chairman, at Liverpool, should be furnished with one of the pamphlets, referred to in my letter of the 13th ult., I felt surprised that Mr. S. should not, in your last week's paper, have supported the principles involved in his lecture at that place. He does indeed write a letter upon the 20th October, wherein he seems to imply, that his name ought to carry with it so much veneration, as to preclude his published sentiments from criticism; but if practical men are considered fair game for the criticism of philosophers, then why not philosophers be subjected to the tests of practice? With these remarks, I will pass over the introductory preface of his letter, regarding Mr. Ryan, Sir J. Sinclair, Mr. Buddle, the Liverpool Polytechnic, and Dr. Faraday, because they have nothing whatever to do with the subject.

Mr. Sweetlove, as a public lecturer, promulgated a theory, which practical persons pronounced erroneous; and, surely, he should defend it, or admit that it is indefensible. Certainly, he ventures, in a small degree, by saying, "I cannot acquiesce in the opinion, that my proposed induction pipe, instead of conveying the gas from certain pot holes, would at once be filled with the general air of the mine, because the hydro-carburetted gas to be removed, has a specific gravity of 0.55; that of air being 1." This levity of the former, would cause it to occupy the higher part of the passages, and flow onward with the general current in a district superstratum, with no more admixture than that arising from its diffusiveness." Now, here again, without meaning any offence, I would recommend Mr. Sweetlove to visit a mine, where he would probably discover a current of air sweeping along the face of the workings, at a velocity of 3 or 4 ft. per second; and, notwithstanding his allegation, "as to the lightness of gas," he would discover the carburetted hydrogen teaming out at every pore of the coal, and admixing with the air current, not in a distinct superstratum, but so fully, and amalgamating with the general air, as to render it impossible to collect it "in pot holes, or otherwise;" and, further, supposing it could be so collected, I again say, that pipes would, by the law of Nature, be filled with the air of the mine from the exterior parts of the workings, including, of course, the gas—such air hurrying out to the nearest possible outlet, and leaving the interior pot holes unaffected. As for the funnel openings, they mean nothing at all; no more air can enter the funnel than can pass along the pipe. He says, "No notice is taken of the pipes for draining the goaves;" I repeat that, without complete insulation, he cannot apply pipes to the goaves, for the reason before alleged, and the ordinary goaves cannot be insulated. A blower in a single drift—such as Mr. F. Smith has written about—has been frequently piped away, being first dammed up; so may a set of goaves, if a drift, or a pair of drifts, through a barrier of coal can be had, wherein to insert dams; but I again repeat, without the slightest intention of offending Mr. Sweetlove, that he is mistaken, if he fancies that such piping can be effected in ordinary goaves, or in ordinary air-courses. Truly, we practical men have been so much accustomed to see incoherent theories broached, regarding the ventilation of mines, that we have long since ceased to bow implicitly to the suggestions of individuals, however highly gifted they may be, without first testing them; and the concluding part of Mr. Sweetlove's letter proves still more clearly how dangerous certain of these theories are to follow.

"If the plan (says Mr. Sweetlove) is admitted to be the only effectual one, as I believe it is in principle, the expense of carrying it out does not form a legitimate element of the question. Although economy of production is to be considered in every process of manufacture, no comparison can be instituted between the value of money and that of human life." We are now testing whether Mr. Sweetlove's plan "is the only effectual one." Messrs. De la Beche and Playfair had all the benefit of Prof. Faraday's piping system, and they did not venture to pronounce it "the only effectual one;" and it was synonymous with that of Mr. Sweetlove—but what has gained for them the compliment, which Mr. Sweetlove seems to envy, is, that after having made many practical investigations of dangerous collieries, after recent explosions, they expressly concluded that "no general plan would apply;" but they did not hesitate to declare, loudly and significantly, "for a good and effective ventilation"—albeit, that it was "only a careful carrying out of the old plans of ventilation." I shall conclude, by regretting that Mr. Sweetlove should have taken anything amiss in my former letter, as it was far from my intention to give any offence.—D.: Newcastle, Nov. 9.

## THEORY OF THE NATURE OF CARBURETTED HYDROGEN.

Sir,—I have often been amused at the confident and dogmatic style in which the communications of your correspondent, T. Deakin, of Blagdon, are written—while, at the same time, he is as often in error as he is correct. In his letter in your columns of last week, he, in his usual style, abuses "Sweetlove" and "Hibernia," as the most ignorant of men, because they have given an impartial and candid opinion as to what they consider the best means of preserving life in collieries; and, at the same time, rendering the workings more economical to the owners. In finding fault with the letter of "Hibernia," in the *Mining Journal* of the 23rd ult., he completely misrepresents him; he attempts to make out that "Hibernia," in his letter, stated that the coal beds in their natural state must necessarily be continually giving out carburetted hydrogen, and thus become deteriorated. Now, Sir, it is quite clear to me, that "Hibernia" perfectly understood the subject he was writing on, and his observations on the volatility of carburetted hydrogen gas are perfectly correct; he says, "coal is porous or crystallised, those pores contain gas, they continue to generate gas, and if that gas is allowed to escape, in a great length of time it would reduce the seam to little better than dust or dirt, the pores are in continuity, and the gas will creep through them on an incline plane, until it meets with some stoppage or dislocation, as a fault or dyke, at which point the greatest amount of gas is found, and the greatest precaution necessary." Now, although "dust and dirt" are, I confess, hardly proper terms for decomposed coal (for such it would be), will Mr. Deakin deny that coal, long exposed to the atmosphere, loses its hydrogen, and becomes dry and efflorescent, burning with less flame, and giving out less heat; if he had ever seen and used coals after a voyage to the East Indies, he would acknowledge such was the case—indeed, in his own peculiar and quaint style, he tells us, that "the coal is formed in basins, that 'the great body may be kept full of water, which is its great preserver.'"—thus acknowledging, that if the coal was not full of water, it would not be preserved, and supporting "Hibernia's" position. The fact is, Mr. Editor, your correspondent is an old man, brought up in the old school, wedded to old notions, out of which you must not expect him to be driven—obstinate withal, and half a century behind the age; what he lacks in scientific knowledge, he makes up for in undeserved abuse; and, like the generality of persons, who embrace the weak side of an argument, fancies he can better his cause by calling ill names. I would advise Mr. Deakin, if he wishes his practical information to be read with a view to instruction, to confine his language to something like moderation, and not write under the illusive fancy that he is better informed than all the rest of the world on the subject of collieries, because he happens to be a collier. On some subjects on which he has had the temerity to write, such as geology, the nature of the gases, &c., he had in future better be silent, as discovering an ignorance thereon which there is certainly no occasion to expose.

Blackburn, Nov. 9.

## MR. RYAN'S THEORY.

Sir,—Mr. T. Deakin is hard upon your correspondent's allusion to the coal-field of the Forest of Dean. That remark is a quotation from a letter, in your Journal, by me in April or May last; I must, therefore, take the burden of his censure. I then adduced the co-existent absence of faults and gas in this coal-field, in support of the correctness of Mr. Ryan's theory. Mr. Deakin's inference, that coal under such an effect should fall to dust, is nearer the mark, perhaps, than he anticipates. Our most extensive and exposed vein, in some localities, so far approaches the state of dust, that a small fraction of anything, but small coal or slack, is extracted from the workings. In its best positions, it is a soft coal, falling quickly to pieces under carriage and exposure to the air; nor will Mr. Deakin's theory of the presence of water, ensure the presence of gas. This coal is bedded under 90 yards of sandstone rock; what amount of water this will furnish, Mr. Deakin's experience can easily answer. The facility of pumping the water, Sir Thomas Phillips and other capitalists, who have made the attempt, can record. This coal has the most water and the least bitumen of our veins. It becomes more bituminous always near such slight imperfections of strata as compose the maxima of our faults. The upper veins, which lie closer together, and less exposed to water, are bituminous caking coals; but in none is there evolved gas. The utmost we know even in these bituminous workings, consists in a few bubbles of inflammable air arising in the workings, when the deposit is stirred. It is quite true, there is good coal in the Forest of Dean; I should be sorry if it were otherwise. For some purposes, its defects are an advantage; but no



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